Industrial FINISHING

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Luminous Paints

Please note the enclosed card. This gentleman was in the office and asked me to give him the names of manufacturers of luminous paints. His company manufactures medium priced jewelry . . . —C. A. L.

Finishing Bent Wood Handles

We note on page 4 of May 1940 issue that the C. Lantern Co. requested some information regarding tumble-finishing their bent handles.

We agree with what you had to say in your editorial comment. From the description they gave, it does not seem possible to tumble-finish handles of this type. However, with the proper dip-finishing machinery, we fail to understand why they should consider dip-finishing "messy" because certainly dip-finishing should be the cleanest of all finishing methods—provided, of course, they do have proper equipment.

If you will give us the full name and address of this concern, we would be glad to write to them at greater length, and perhaps arrive at some solution to their problem.—Apex Products Corp.

Coating for Plastic

On page 79 of your May issue, we note there is an inquiry concerning finishes that have good adhesion to cold-molded synthetic resins. We manufacture several types of finishes for this purpose and it is possible that we might have something that is interesting.—Standard Industrial Products, Inc.

Silver on Glass

I am looking for a silvering process that can be applied for commercial purposes, preferably one that can be sprayed on glass. The finish is to be applied to an oval surface. I understand there are various types of finishes that can be sprayed, but not all are practical for indoor and outdoor display work.

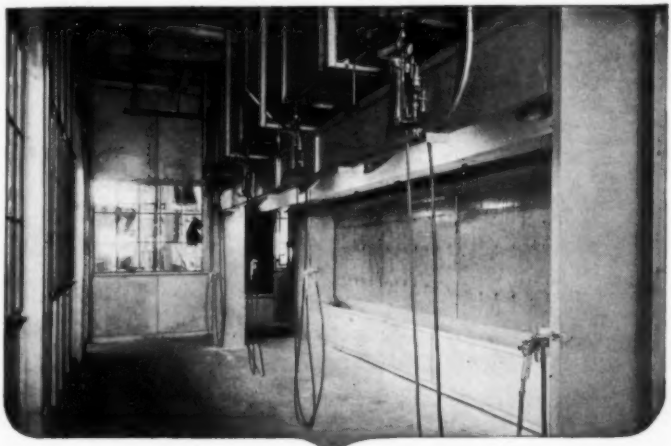
Would you please forward any information that you may have at your disposal?—R. S. Co. (Electric Signs).

Multiple Striping

We would appreciate your advising us immediately by return air mail or wire, where we may obtain multiple striping machines. We wish to stripe small wooden balls.—J. P. Co. (Toys & Games).

Bowling Pin Finish

We are endeavoring to ascertain the manufacturer of the product used for bowling-alley pins, a product in which the pins are dipped. Also an outstanding product for floors in bowling alleys. Would appreciate it very much if you would



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let us know who manufactures the above two outstanding products, but ask that you kindly do not reveal the name of the inquirer.—B. G. Co.

Several advertisers in INDUSTRIAL FINISHING are in position to supply quality finishes for the purposes mentioned.—ED.

Tumble Finishing

We are interested in learning the names of concerns who make equipment for barrel finishing for tumbling paints or lacquers. We would also appreciate very much any other information you can pass along to us on this subject. Our interest lies in finishing small metal parts.—J. H. Co.

Hand Graining

Can you refer us to any source of information, literature or data of any kind on hand graining of metal furniture? We are not thinking of this so much from a large production standpoint, as from the standpoint of a small metal furniture manufacturer in South America, who wants general suggestions and help on the art of graining.—F. W. Co. (Export Div.).

In a letter we are sending you tear sheets of some articles on this subject, as published in past issues of INDUSTRIAL FINISHING magazine. Also, we offer an illustrated book entitled "Graining, Ancient and Modern" (150 pages 6x9-in.) priced at $5.00.—ED.

"Printed Lacquers"

Will you kindly furnish us with the name of the manufacturer of the "printed lacquers" mentioned on page 12 of your February issue?—D. G. Co. The House of Mirrors).

See full-page advertisement on page 57 of same issue.—ED.

Primer; Crack Filler

We would like to know what, in your opinion, would be the best material to use for primer on Louisiana Red Cypress. Our problem is rough grain and season checks, and

we desire a smooth rich finish. We would like to know what form of putty you consider the best for filling checks or cracks in Louisiana Red Cypress, to be used before the primer or surfacer is applied.—A. Casket Co.

Luminous Pigment

We are interested in locating a source of supply for luminous pigment for making luminous paint, and would appreciate very much if you could give us the names of places where this can be obtained. —A. Chemical Products Co.

Flocked Screens

Can you supply us with the name of a manufacturer or sales agent from whom we can purchase flocked metal screening?—M. Radio Cabinet Co.

We do not know of any concerns that supply screens already flocked. Perhaps you can have the screens flocked in a local custom-finishing shop or in your own finishing room. —Ed.

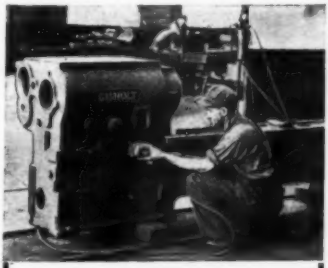
Bake Finishing

On page 80 of April Industrial Finishing, you published a request for complete information about baked enameling. We find ourselves in much the same situation as your correspondent and would greatly appreciate the same information relative to baked enamels and wrinkle finishes.—E. Electroplating Co. (Metal Finishing).

Reprints Wanted

We would like permission to reprint an article entitled "Graining from an Etched Metal Plate," written by Mr. Jake Snyder in the April issue of Industrial Finishing. If you have any reprints available, we would be very glad to purchase them. If not, we should like to have 20 additional copies of the April issue of Industrial Finishing.—The Ceramic Forum.

We have made no reprints of this article and we are not in position to spare as many as 20 copies of the magazine. There has been a heavy demand for our April issue and our supply of office copies is almost ex-



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Staining; Enameling

We are considering installing a staining and enameling department in our plant. Please send us complete information as to the equipment necessary and any other information that will enable us to get a quick start.—C. C. & Sons (Dowels; Candy Sticks).

Hot Lacquer

We would like to know in hot lacquer application, the percentage of thinner used, type of equipment, type of thinner, and the temperature at which material is sprayed. N. I., Inc.

Information supplied.—ED.

Film Scrap

We are wondering if you would know whether there is anyone around Indianapolis who would be interested in buying our film waste for reclamation purposes?

Yes, the American Cellulose Co., 307 N. Pennsylvania St.—ED.

Fly-line Finishes

In the January 1940 issue of your magazine you mention Fly Line finishes on page 84. Would you furnish us with a list of manufacturers, such as was submitted to the firm making that inquiry?—B. F. Co. (Fishing Lines).

Burning-in Knife; Crack Filler

We are interested in a practical knife such as is used for stick shellac burning to be used on lacquer; also a substitute for the stick shel-

lac for lacquer, or some substance that could be used to fill nail holes or cracks on a finished wood piece. Please advise if you know of any manufacturer who makes this type of knife or this burning product.—N. L. Co.

Information supplied.—ED.

Portable Electric Sander

We are in receipt of your letter of March 18, in reply to our inquiry of February 24 regarding electric sanders. We have pleasure in informing you that we have in the meantime received a quotation from the company you recommend—which we are at present studying. We sincerely hope that this connection will lead to good business between our two firms . . . . S.-T. Ltd., Zurich, Switzerland.

Ash-Tray Lacquer

We are interested in learning if there is available in the American market a high-gloss finish other than vitreous enamel, which can be used for finishing ash trays. If possible we prefer a non-baking finish such as lacquer. The finish desired will be needed in a variety of colors and, of course, should withstand heat and other abuses relative to its use.—C. Copper & Brass Co., Canada.

10c Paint Line

We are looking for a 10-cent paint line. Can you advise if some such manufacturer would be interested in getting distribution on the Pacific Coast? We have a fine sales organization that will stand thorough investigation.—P. S. Co.

Silk-Screen Stenciling

Will you tell us by return mail where can we get full information on the silk-screen process, such as full instructions in making the screens and what sort of finishing material to use? In other words, we should like to install this process to take the place of hand work now being done on flat surfaces, all on wood.—S. O. Co. (Woodcraft).

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Laboratory Finish

We manufacture hard-maple laminated tops and work benches. We have an order for tops to be finished with black acid-resisting paint. We are wondering if you can supply us with a paint that is easily applied, giving a nice finish, and which is acid-resisting? We do not refer to carbonized tops, as this is quite a lengthy application. If you can supply us with a black acid-resisting paint, please send us your quotation. Also tell us how it should be applied.—B. B. Co.

Pearl Essence

Kindly furnish us with the names of one or more manufacturers of pearl essence.—S. M. Co. (Specialty Wood Products).

Mechanical Stripers

In the Feb., 1939, issue of INDUSTRIAL FINISHING, page 55, there appeared pictures of convex and concave wheels for mechanical stripers. Will you kindly forward to us the name and address of the manufacturer of these wheels?—M. P. Co. (Steel Fabricators).

The wheels you refer to are products of Beugler Mfg. Co., Los Angeles, Calif.—ED.

Flock for Caskets

Some time past, in one of your issues of INDUSTRIAL FINISHING, we saw an article on flocking. We are interested in learning more about its operation and are writing to several of your advertisers for information on specific equipment for use in the application of this material. Would you be so kind as to send us a copy of the magazine containing information on flocking and also any other information that you may think would be useful to us in applying this finish to wood?—K. Casket Co.

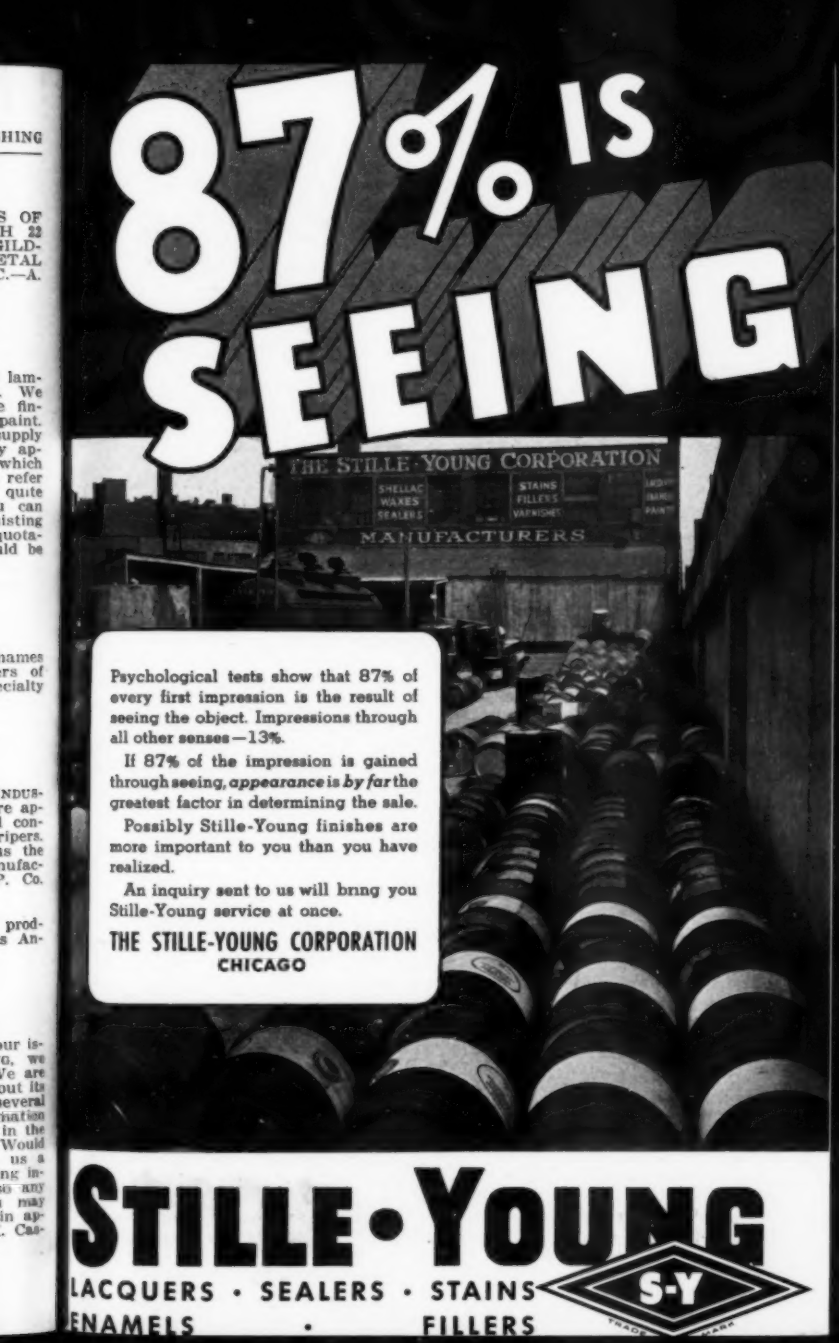
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Fig. 1—Masking a lubricator cabinet preparatory to spraying horizontal red band.

How We Use Masking Tape

THE USE OF masking tape is being extended into many more finishing rooms; modern 2-tone color jobs require vast quantities of it. For example, in the manufacture of lubricating equipment for automobile service stations you see streamlined designs with horizontal bands of contrasting color used effectively. This clean attractive equipment makes a striking appeal to the motoring public—makes automobile service stations more inviting.

In the illustration above (Fig. 1) you see one of the latest multiplex lubrication cabinets being masked so that a wide horizontal red band can be sprayed over the white body finish. The completed job appears in Fig. 2. In Fig. 1, the three domes are removed; they are sprayed separately.

To know exactly where to place the edge of the tape for our color band we use a marking gauge—a small piece of 18-gauge steel with a right angle bend and two holes drilled through it for insertion of a pencil to mark the position of the color band. A sketch of this marking guide appears in Fig. 3. The opera-

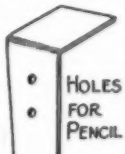


Fig. 3—Gauge.

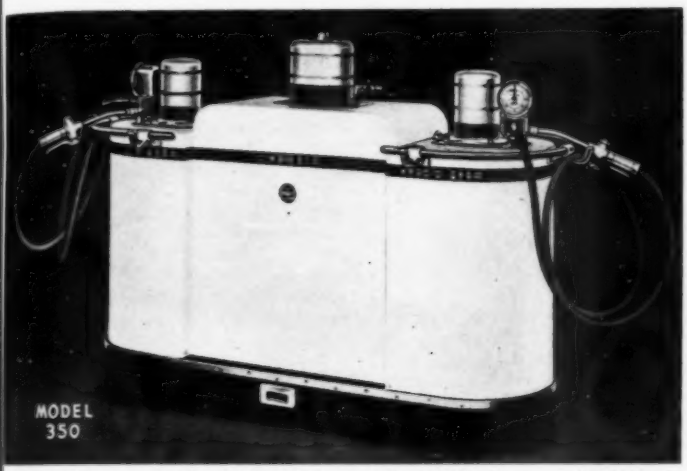


Fig. 2—The completed multiplex lubricator cabinet which is shown masked in Fig. 1.

for Color Band Separation

BY HOWARD F. DEAN
Finishing Foreman for The
Aro Equipment Corporation

tor hooks it over top flat edge of the cabinet and moves it along with one hand while in his other hand he holds a soft black pencil with the point sticking through one of the small holes in the gauge. This gauge is used only on the rounded ends of the cabinet. For the flat sides we use a straight-edge as a marking guide, joining the straight lines with those extending around the curved ends.

On this cabinet we use the standard 1-in. flat-back tape in order to get a clean-cut band. With the guide lines made, the workman is ready to apply the masking paper and masking tape. Paper of suitable width is placed about ½-in. below the lower mark and is stuck fast with small pieces of tape. This masking paper extends all around the cabinet and is lapped over at the end. Then a continuous strip of tape is carefully applied, one edge overlapping the paper mask while the other edge accurately cuts the guide line all the way around.

This work calls for considerable skill and a practiced eye to maintain a smooth horizontal line

clear around the cabinet. Then the tape is rolled down with a small hand roller — the rubber roller being about 1½-in. in diameter and 2-in. long, with a slightly convex or crowned surface. This rolling can be overdone. The tape should be rolled only enough to make it adhere tightly to the finished surface. There must be no loose edges.

We have found that it is a good plan to leave the end of the tape loose for about ½-in. so the spray operator will have no trouble peeling it off and removing the mask after the color band has been applied.

The top of the cabinet is also masked and taped down to the upper border line of the color band. In Fig. 1 you see the workman completing the masking job, finishing up along the top edge near one end.

One important thing we have learned through our extensive use of masking tape is this: Never let the tape become damp. Masking tape should always be kept in a dry place. Tape that has been subjected to moisture is difficult to handle.

Fig. 4—Masking metal cabinet domes with paper attached to crinkle tape—to follow curves of dome.

In the illustration marked Fig. 4, a workman is masking a number of formed domes for a deluxe background cabinet unit. The part being masked (covered) is satin chrome. The center part of the dome is to be finished in a baked white enamel. On this particular job we use crinkle tape because, with this crinkle tape, it is much easier to follow a double curved surface than with the flat-back tape.

The tape and paper are fastened together before being applied to the surface to be masked. We use a paper-roller taping machine which is composed of a paper roller and a tape roller. The tape and paper together are pulled under a heavy bar roller which sticks the masking tape to the masking paper. It is then cut to the proper length and applied to the chrome surface as shown in Fig. 4. After the domes have been sprayed the masks are pulled off and the domes are ready for the baking oven.

What I have illustrated and described here represents just two of our many different units that require masking.

In conclusion, let me remind the man who is just beginning to use masking tape to always leave a short end of the tape loose for the sprayer to grasp when he is ready to remove it. Follow the guide line or line of division accurately so you will have a smooth line of color separation. Roll the tape down so it adheres.

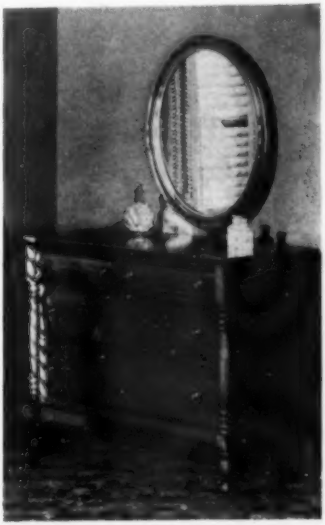
closely to the surface, but do not overdo this with too much rolling or too much pressure; otherwise the tape may break in several places when it is being peeled off, and this will slow up production operations.

Utilizing Infra-Red Radiation in Baking

IT HAS BEEN the experience of many finishing superintendents that the production of air-heated ovens, both conveyor and batch types, is sometimes limited by the pimpling which occurs when finishing materials are made to reach the baking temperature too quickly. Finishes that are suddenly brought to heat often dry on the surface, thus entrapping the solvents which expand under the action of the heat and push the film apart in small crater-like holes.

Such a condition might be eliminated by asking the manufacturer of the finishing material to reformulate the product, but there is always the chance that the new material might not have all the properties and handling characteristics of the old one. Another possibility lies in allowing a period of air drying before the parts are placed in the oven. This, however, requires extra space and handling and, in addition, there is the problem of rejections due to dirt picked up during the air drying operation.

In this connection it has been suggested that advantage might be taken of one of the outstanding characteristics of infra-red radiation. It is a well known and proven fact that infra-red radiant energy, unlike ordinary hot air heating, tends to promote solvent movement throughout the whole of the finish film and not merely near the surface. Therefore, in instances where it is desirable to increase the production of hot air ovens and still not have undesirable surface drying, a bank of infra-red lamps may be placed along the entering zone of a conveyor oven or conveniently near the entrance of a batch oven. These lamps will produce rapid and uniform solvent elimination and allow parts to be brought to temperature in a shorter time without pimpling or cratering.—W. S.



An attractive maple dresser, glamorized by an oval mirror framed in gold, with restrained touches of delicate carving. The gold frame is really wood, finished in gold leaf like picture frames. Photo courtesy of the American Furn. Mart.

Facts About Thinners

FOR OIL AND SYNTHETIC ENAMELS AND VARNISHES

By J. W. McHUGH
Schenectady Varnish Co.

Practical information about the chief characteristics of different petroleum and coal-tar thinners such as naphtha, toluol, turpentine substitute, kerosene, benzol, xylol . . . and what finishers should know about the specific gravity, flash point, distillation range, solvent power and evaporation rate.

WITH THE ever growing list of thinners on the market today, there is a real need for clarification of ideas as to these various types of solvents, their uses, their general characteristics, the specifications under which they may be purchased, what they may be expected to do—and more important, what they will not do. The thinners discussed in this article are used chiefly in oil and synthetic varnishes and enamels and, to a limited extent, in nitrocellulose lacquers. It may be stated also that no differentiation between the terms solvent and diluents will be made, and that the terms "solvent" and "thinner" are synonomous.

Turpentine has been used as a thinner for many years but it is only within the last 25 years or so that petroleum naphthas, and more recently coal-tar naphthas, have come into general use. These two classes of thinners cover nearly all applications for oil varnishes and alkyd (Glyptal) and phenolic synthetics.

The Different Naphthas

Petroleum naphtha, as the name signifies, is obtained from a crude-oil base which may vary considerably according to its geographical source. Straight-run naphthas are produced from crude oil by fractional distillation into various cuts or ranges. Many chemical treatments may follow to free the cut from sulphur, objectional odor, or to improve the color. By careful selection of the crudes used, and by special chemical treatment, naphthas can be produced with higher solvency properties and definite distillation curves. Under this classification will come the naphthas that have been treated with hydrogen under high temperatures and pressures, producing properties in between those of petroleum and coal-tar thinners.

Coal-tar naphthas are derived from the distillation of coal or gastar residues and consist of benzol or benzene, toluol, xylol, and their heigher homologues.

Chemically they are much different from the petroleum thinners and find their use chiefly as solvents for synthetics, many of which cannct be thinned with petroleum spirits.

The chief petroleum thinners used today are VMP (Varnish Makers and Painters) 54° naphtha, turpentine substitute and kerosene. There are many others sold under trade names and special classifications but these four will cover most finishing uses.

VMP naphtha is a fast-evaporating solvent with a low-boiling range, finding use when a quick set-up of the film is important. Examples: Spraying on a vertical surface, where runs and sags must be avoided; for tumbling, which requires a fast-drying thinner to prevent subsequent marking or sticking. A rapid-drying thinner is not generally satisfactory for dip finishing because of the high evaporation loss that would occur, but it can be used if frequent adjustments are made in the viscosity of the varnish.

The 54° naphtha is a general purpose thinner that is used for many different applications. Its medium-rate evaporation properties make it suitable for spraying, brushing and dipping.

Turpentine Substitute; Kerosene

Turpentine substitute, which is comparable to turpentine, is a slower-evaporating solvent with a flash point usually above 85°F. This is high enough to meet most fire insurance requirements in plants where a lower-flash solvent might be dangerous or forbidden. This naphtha is useful because of its excellent leveling qualities after spraying or roller coating, and its fine draining properties for dipping enamels and varnishes. Many times it very definitely reduces the "drag" of brushing enamels.

Kerosene is a still heavier solvent with a flash point near 120°F. Because of its slow drying it finds rather limited application in the finishing industry, but in some special applications in the insulating varnish field, it is used extensively.

The hydrogenated naphthas are being used in increasing volume by the industry and are offered in four different distillation ranges which cover nearly any industrial requirements. With their splendid solvent power and low cost they meet with favor in the field of synthetics.

Benzol; Toluol; Xylol

Benzol is now little used due to its toxic effect on the human system. Several states have laws that prohibit its use except where provisions are made and used to insure adequate ventilation. The use of toluol is also limited by its very rapid evaporation. Xylol, the next heaviest of this family, has a practical evaporation range which is quite suitable for general finishing. As a solvent for nearly all synthetics, it is especially popular. Commercial xylol and solvent naphtha are industrial grades of xylol with only slightly wider distillation ranges and perhaps a somewhat lower cost. High-flash naphtha is a fairly heavy coal-tar solvent, being used chiefly in roller coating because of its good after-flow.

Data Revealed by Tests

In the table accompanying this article, I list the various properties that are of most interest to

Thinner	Specific Gravity	Baume'	Flash Point	Kauri Butanol Test	DISTILLATION RANGE				
					Initial Drop	10%	50%	90%	97%
VMP Naphtha	.752	56°	25°F	38	218°F	234°F	259°F	292°F	418°F
54° Naphtha	.760	54°	45°	33	222°	248°	323°	372°	428°
Turpentine Substitute	.769	52°	85°	32	294°	320°	342°	380°	448°
Kerosene	.804	44°	120°	30	346°	378°	426°	494°	518°
Turpentine	.862-.875		85°+	72+	310°			338°	
Xylol	.860-.870		80-85°	100+	280°			285°	
Solvent Naphtha	.860-.870		75-85°	100+	280°			295°	
High Flash Naphtha	.865-.875		95°+	100+	300°			375°	

the purchasing agent and finishing foreman. The tests mentioned here are not all that can be made, but they are the ones that are easiest to perform and which give the quickest and most accurate picture of just what the thinner you are using, or propose to use, will do.

The data given for the various solvents are fairly average and representative for the thinners in use today. Since many companies selling solvents have given trade names to their products, it is often important to be able to compare those offered by various producers. A working familiarity with these tests and what they mean will enable the buyer to purchase the best thinner for his needs. These tests may serve also as a check on different shipments.

Specific gravity is defined as the relation of the weight of a gallon of thinner to the weight of a gallon of pure water at the same temperature. The term Baume' or Be' is another way of saying the same thing. This test is made with an instrument called an hydrometer, and for purposes of control the test can be made at factory temperatures. This test is probably the most important and the most widely used of all, since it is simple and immediately shows up any variation from the standard.

The distillation test determines the various component parts of the thinner, giving a picture of the boiling range and how the thinner will evaporate from a varnish. The exact procedure is described by the ASTM Method D86-30. This is the next most important and widely used test.

"Flash Point;" Solvent Power; Evaporation Test

The term "flash point" is indicative of the temperature at which the thinner will catch fire when exposed to an open flame under certain specified laboratory conditions.

The Kauri butanol or solvent power test is an arbitrary method set up to determine how much a

certain standard gum solution may be diluted with thinner before the gum will break or gel out of solution. A few years ago this test was of little interest, but with the advent of synthetics which require stronger thinners, solvent power has become a common term.

The test for evaporation or loss of solvent from a thin film, is designed to evalute the rate of drying, the results generally paralleling those of the distillation curves of the same thinners. Since this test is difficult to make, the results are not exact and should serve only as an indication.

There are other tests designed to reveal special information, but with a working knowledge of the procedures just described and a definite understanding of what the results mean, the buyer should be in a much better position to select the proper thinner for each specific job. All of these methods are described in Gardner's book, "Physical and Chemical Examination of Paints, Varnishes and Lacquers."

Random Supplementary Notes

The terms "naphtha" and "mineral spirits" have, through use and misuse, become too broad to refer to any particular thinner. Naphtha may refer to either a petroleum or a coal-tar base product. Mineral spirits may mean anything from VMP naphtha to kerosene.

"Benzine" is another term often misused, generally referring to a low-boiling petroleum thinner but because of the similarity in pronunciation and spelling of it and benzene or benzol, confusion often arises.

"Solvent naphtha" (coal-tar) is often taken to mean naphtha solvent (petroleum spirits). "Industrial xylol" is a much more exact and less misleading name. Generally solvent naphtha can be used as a thinner for nearly any type of varnish or synthetic, but in many synthetics it is fatal to add the slightest quantity of petroleum spirits. However, because of its varnish remover action, xylol should be used with care in 2-coat applications. The second coat may lift or soften the first coat.

For enamels or varnishes that have a tendency to skin in the dipping tanks, a 10% addition of turpentine is suggested. This will often correct the trouble.

For certain applications in the wire-cloth industry, the varnishes may be reduced as much as 500% with turpentine substitute. Special thinners with high-solvent power have been developed to meet this extreme condition.

Some of the newer synthetics such as vinyl acetate, vinyl acetyl, and ureau-formaldehyde are soluble in a few organic solvents, hence they present a special problem in themselves.

In thinning any varnish or enamel, it must be remembered that the thinner should be slowly added to the varnish, stirring vigorously at the same time. A reversal of this procedure may cause the varnish base to gel or break out.

In the winter time the thinning should be done with the varnish and solvent at room temperatures. Otherwise an imperfect mix may result. Both varnish and thinner should be brought into a warm room, at least a day or two before they are to be used.

In the early days of the alkyd

and phenolic synthetics, coal-tar thinners were required in nearly every case. Today, however, with greater knowledge of the formulation of these varnishes, petroleum thinners may often be used.

The user of finishing materials should make certain that he knows just what thinner is needed for the job. Then buy it either direct from the varnish maker or, if from another source, according to strict specifications.

Spray Equipment Catalog

The Eclipse Air Brush Co., Inc., 398 Park Ave., Newark, N. J., has just issued Catalog No. 77, a 32-page, 8½x11 booklet covering its complete line of spray equipment for both manual and automatic operation. Included in the catalog is a section devoted to the company's Pneumix air-motored agitators. Write to Eclipse for a free copy.

S. C. Johnson & Son Announces Appointments

Mr. D. D. O'Connell, formerly of the Industrial Laboratory of S. C. Johnson & Son, Inc., was recently transferred to the Industrial Sales Department in the Grand Rapids, Mich., area.

The company has appointed Wayne W. Lehto as sales engineer of Industrial Wax Finishes. Mr. Lehto's wide experience in the industrial field enables him to assist manufacturers in the wax finishing of products of all descriptions, and especially those in the composition and rubber line. At present he is contacting manufacturers in the Middle West.

Orrie D. Maal Dies

Mr. Orrie D. Maal, for 15 years Los Angeles, Calif., representative of S. C. Johnson & Son, Inc., died April 13, 1940, after an illness of several months. He was well known and well liked in the industrial finishing field for many years. Readers of Industrial Finishing will remember some of his excellent articles on wood finishing. He leaves a widow, Mrs. Mabel Maal.

Mr. Maal's former associate, Mr. Gary Bonthius, will represent S. C. Johnson & Son, Inc., in and around Los Angeles.

Despatch Oven Co. Appoints District Engineer in Texas

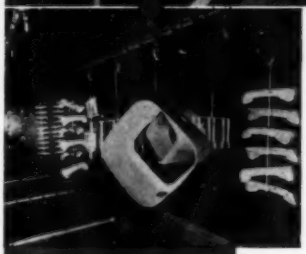
The Despatch Oven Co., Minneapolis, Minn., announces the appointment of Mr. Phil L. Capy, Dallas, Texas, as District Engineer for the company in the State of Texas.

The appointment of Mr. Capy means the establishment of the 22nd Despatch sales office in the United States and South America for industrial ovens, dryers, furnaces, and air heaters. It is another step in the company's extensive expansion program to give customers as well as prospective buyers the best in engineering and personal service.

During the past six years I have been fortunate in obtaining your publication, INDUSTRIAL FINISHING, through the United . . . . To be without this valuable publication would be a considerable loss to me because I have obtained very valuable information from it and look forward every month to receiving it. I have made a booklet of all interesting subjects obtained from this which I considered were of value to any individual doing work along my line, either for the present or the future, and I assure you the data I have accumulated could not be separated from my files. I consider them of great value to me.

Will you kindly continue to send me this publication to my present address? Some time in the future I intend to contribute to your magazine an article which I hope will be of as much value to some of your readers as other articles published have been to me.—C. R. S. (Industrial Engineer).

Another Complete Mahon FINISHING SYSTEM



. . . a Typical Example of Thorough Engineering

This complete Finishing System at the Maytag plant, Newton, Iowa, is unique in that the entire system, with the exception of the Spray Booths, is located on the roof of the plant. All Metal Cleaning, Rinsing, Rust Proofing, Drying and Enamel Baking equipment is housed in an all-steel firesafe enclosure on the roof, yet each operation in the finishing process is perfectly coordinated to produce the desired results at the lowest possible cost . . . it is a typical example of Mahon's advanced engineering in this highly specialized field. You can turn your finishing equipment problems over to Mahon engineers with complete confidence. Consultation will not place you under obligation — write today.

THE R. C. MAHON COMPANY

DETROIT — — CHICAGO

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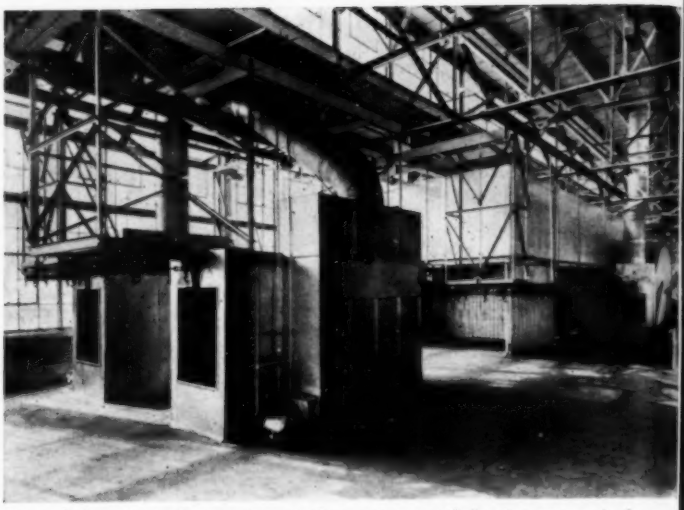
MAHON



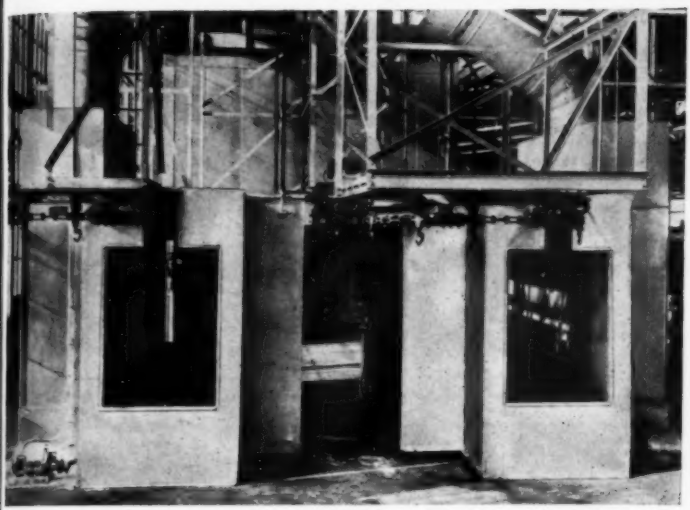
General view of complete equipment. Entrance to metal-cleaning process is shown at right. The oven adjoins this entrance. At left foreground are two spray booths.

Metal-Cleaning-Finishing in

Illustrations and data supplied by courtesy of the R. C. Mahon Co.

AN OUTSTANDING finishing system, installed in the Allis-Chalmers plant at Pittsburgh, Pa., includes complete equipment for cleaning, rust-proofing, drying, spray-painting and baking operations in the production of transformer containers, which range in size from 31-in. in diameter by 38-in. deep, to 41-in. in diameter by 44-in. deep. The entire system was engineered and coordinated by the equipment manufacturer to meet the Allis-Chalmers' specific requirements in the application of two coats of synthetic enamel in the finishing process.

Transformer containers, suspended in an inverted position, are carried through the entire system by a monorail conveyor. They pass through washing, rinsing and rust-proofing stages of the system; then through a direct-gas-fired drying oven, and on into a hydro-filter spray booth where the first coat is sprayed by hand. The products are then carried into and through a baking oven where the first coat is baked at a temperature of 350°F. The continuous conveyor moves the product out of the oven, through a cooling zone, and into a second hydro-



Close-up of entrances to the two spray booths. The oven is back of these booths. Plan view and side elevation of the equipment appears on the following two pages.

ing in Allis-Chalmers Plant

filter spray booth where the second or final coat is applied; and thence into the baking oven where the final coat is baked at a temperature of 350°F.

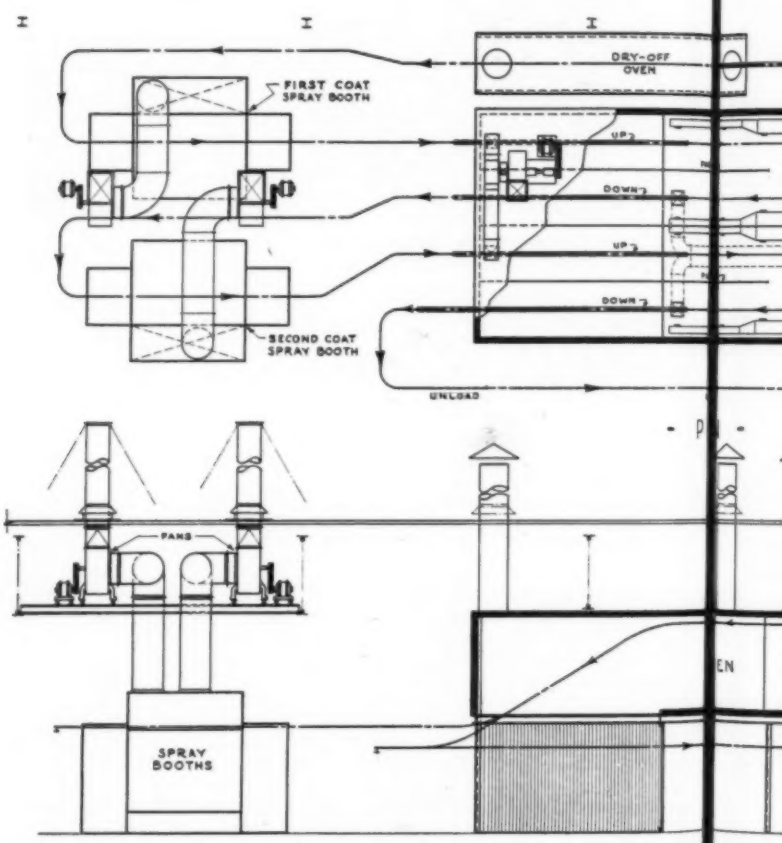
The conveyor carries the finished products to the unloading zone which is adjacent to the loading area. The washing and rinsing stages are heated by means of immersion-type gas heaters in which the gas is burned in tubes submerged in the solution in the tanks. The rust-proofing section is heated by a direct-fired gas-heating system in which the gas is burned directly in the processing chamber. This method of heating eliminates considerable build-up of scale on the heating

Here is a splendid example that is representative of the present trend to continuous conveyorized finishing, plus cleaning of metal, rust-proofing and paint-baking at high temperature. The entire layout was designed, furnished and installed by a large company that specializes in equipment of this type and similar character.

equipment, and also provides better conditions for rust-proofing in the processing chamber, due to the fact that a large percentage of the oxygen is burned from the

atmosphere in the process stage, and processing is accomplished in partially reduced atmosphere.

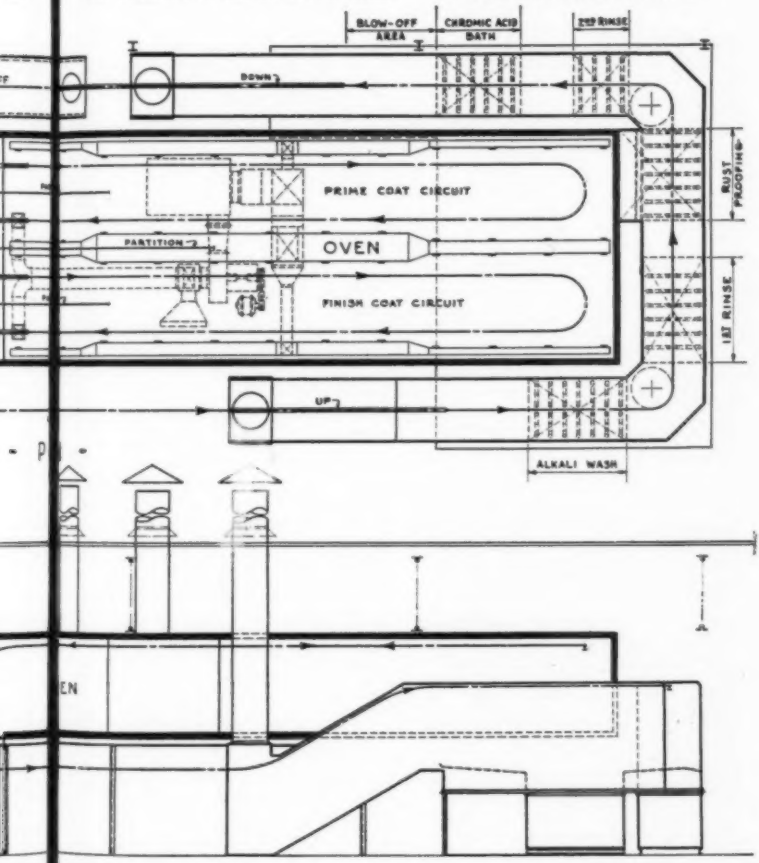
The gas burners on all of these tank heating units are fitted with complete safety and temperature control systems. The safety control units are designed to automatically cut off the main gas valves in case the pilot lights are extinguished, or when electric current fails or when the gas pressure drops below a predetermined point. The temperature control units are designed to maintain an operating temperature in



Plan and side elevation views of the conveyorized finishing system, which inc

the tanks of approximately 180°F.

Gas burners are designed to operate on a high-low operation. At the exit end of the washing, rust-proofing and rinse units, an automatic blow-off is provided to remove entrained water held in the bottoms of the inverted transformer containers. This is an essential operation to insure the removal of all excess water before entering the dry-off oven. In this installation the blow-off air is taken from the blower that supplies combustion air for all of the gas-burning equipment.



ch incl[illegible]l-cleaning, rust-proofing, rinses, chromic acid bath, spray-painting and baking.

The dry-off oven is heated by means of a direct-fired line burner mounted on the floor of the oven and designed to operate on high-low operation. It is fitted with complete safety and temperature controls to maintain an operating temperature of 350°F.

The two hydro-filter spray booths are of the open-top down-draft type fitted with full-flooding curtains so that the entire back of the booth is flooded with water. All over-spray or pigment is removed from the air in the centrifuge section of the hydro-filter chambers before it passes out through the exhaust fans.

A maple chest of drawers—serviceable and easy to look at. Here is where the quality of a good finish really shows up, especially the workmanship. Photograph courtesy of the American Furn. Mart.

The baking oven, for both first and second coats, is heated by means of a surface combustion direct gas-fired air heater designed to burn gas in the combustion chamber, and circulate the heated air and products of combustion through the oven proper. This heater system is designed to recirculate a considerable amount of the air handled from the oven so as to retain the heat therein. The gas burner and blower equipment are installed on the floor directly below the raised oven and are equipped with complete safety and temperature control.

This efficient finishing system was designed to do a specific job thoroughly and economically. At its normal conveyor speed of 3-ft. per minute, it handles 50 transformer containers per hour. The conveyor is equipped with a variable-speed drive which permits a conveyor speed range of approximately 50% above and below normal operating speed.

Surface Treatment of Steel Prior to Painting

A number of surface treatment processes which may be applied to steel, whether plain or galvanized, before painting are described in Building Materials and Structures Report BMS44, just issued by the National Bureau of Standards, Department of Commerce.

The results of accelerated laboratory corrosion tests designed to determine the relative effect of these treatments in improving the protective value of paints are discussed in the report. Comparison of results is limited to the tests themselves, and conclusions are drawn on the basis of factors affected by conditions peculiar to the individual test.

The present report is the first of a series in which it is proposed to discuss the results of laboratory corrosion tests and supplementary outdoor exposure tests of surface treatments for the corrosion protection of plain and galvanized sheet steel. Copies are obtainable at ten cents each from the Superintendent of Documents, Washington, D. C.

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How to Match Colors

WITH STAINS MIXED TO SUIT DIFFERENT WOODS

Foreman Finisher explains facts about color matching and uniforming with wood stains, telling you what colors to select and how to combine and use them to produce fine finishes on different woods.

BY F. R. BOYNTON

IN GENERAL, no given set of rules can be laid down for matching stain colors. The knowledge and technique is gained after considerable study and many years of practical experience. The first step in stain matching is to become familiar with the primary colors.

The non-uniformity in woods used for making furniture makes color matching important. Even if a suite of furniture or just a single piece of case goods is made entirely of one kind of wood—say mahogany or walnut or red gum—there will be more or less variation in the color, texture and grain of different pieces of wood entering into that construction. Of course, it would be possible, if cost were no item, to carefully select the wood for a single piece or suite of custom made furniture so that you would have reasonable uniformity in color, texture and grain. But this isn't done where furniture is made on a quantity production basis. In fact, in the interest of saving costs, the use of wood of great natural beauty is often limited to areas where it will show most effectively—and here it is generally used in the form of thin veneers. Elsewhere solid woods of a different kind, and less expensive, are used—including sapwood along with richly colored heartwood. This sets up a uniforming problem for the finisher.

Color is no obstacle in imitation. If the grain and texture of two different woods are similar, stains can be made to match or uniform the different colors perfectly. Of course, if there is a difference in the grain and texture of different woods adjoining each other in the same piece of furniture, that generally shows poor judgment on the part of some one in the woodworking department. The finisher can only match the colors; he is not in position to change the texture and grain of the wood, which will certainly show through a transparent finish.

The history of stain powders used today is a history of the coal-tar aniline industry. Aniline dyes were developed about the time of the Civil War and were first used for dyeing fabrics. As far as wood-finishing is concerned, aniline dyes are divided into three

classes—water-soluble, spirit-soluble and oil-soluble.

Chemical Stains

Chemical stains are obsolete, but occasionally a finisher will come across a color that requires this type of stain in order to obtain a match. A little knowledge about this type, therefore, will eliminate difficulty in some cases. Tannic acid, 5% solution (5 parts T. A. to 95 parts water) will produce a light shade of brown. It is generally used on woods that have a low tannic acid content. Bichromate of potash, 4-oz. to the gallon of water, is usually brushed over this to produce the proper shades of walnut, etc.

Nitric, sulphuric and picric acids produce yellow shades on most woods. If used full strength, they produce brown shades. Muriatic acid will produce black; when reduced with water it will make a shade of brown, depending upon the amount of reduction. Bichromate of potash and carbonate of soda will produce different shades of brown on some woods and yellow on others.

Mahogany dining room furniture of 18th Century style. The pedestal-type table may be extended from 26 to 92-in. Photo courtesy of the American Furn. Mart.

Permanganate of potash was the principal chemical stain of earlier years. Mixed in the proportion of from 4 to 8-oz. to the gallon of water, it would produce most all shades of brown desired for oak, walnut and, in some cases, brown mahogany. One of the advantages of this stain was that it could be completely removed with a saturated solution of hydrosulphite of soda—if the wrong shade happened to be applied by mistake.

Water Stains

The chief merits of water stains are that they are far more clear, more brilliant in hue and more permanent than the oil-soluble type—and in the matter of penetration they are also superior. However, the superior finishes produced with water stains are not obtained without some extra effort and cost. Naturally, water stain raises the grain of the wood, and a size coat must be applied and sandpapered to smooth the surface.

Machine sanding of the wood cuts off the fibers to make the surfaces smooth, it is true, but this sanding also presses the wood fibers into the open pores, closing them to the entrance of filler. Sponging the wood with water or water staining opens these cells, making it possible for the wood to be filled properly. Credit should be given this fact when the disadvantage of extra sanding is cited.

Choose One Brand and Use That Exclusively

The first step in successful color matching is to buy stain powders from a reliable finishing supply house and continue buying from the same establishment. By

doing this the finisher will find that he has eliminated the possibility of variables. Different manufacturers produce anilines of slightly different hue and in some cases the strength will vary. If the same brand of powder is used, the finisher soon learns exactly what colors he can produce on different woods—and to change the tint he merely adds more powder or more liquid to the solution.

Mix Your Stains So the Solution "Stays Put"

Once the stains are mixed, the aniline should remain in perfect suspension, even if a large batch of stain is made up at one time. If you have used too much powder, you will have what is called a "super-saturated solution" and crystallization and precipitation will take place when the solution becomes cold. To illustrate what happens in a stain solution, a gallon of water may dissolve 2-oz. of dry coloring completely and still remain clear (not cloudy). If the temperature drops down to 50° or 40°F., it may still remain uncloudy with no precipitation. Add another 2-oz. or more of powder and bring the solution to the boiling point and you will have the same clear color. No deposit will be noticed on the bottom of the pot. Allow the temperature to drop to 70°F., and the excessive load of color will begin to precipitate to the bottom of the pot. Here is where trouble begins. Crystallization keeps going on to the extent of throwing out of solution not only the extra color added but also some of the original 2-oz.. hence a weaker stain solution. Result: Off-color trouble.

If the stain is applied warm the result will be clearer colors and uniformity of the stained surfaces. If a super-saturated solution is used, any insoluble material should be strained before the stain is applied. Otherwise you may have a cloudy, spotted and streaky color. This is particularly true of the walnut browns.

What Colors to Select and How to Use Them

A knowledge of color and color harmony will aid the finisher in matching any color with water stains. The following colors are about all you will ever need, and some of these you will seldom have occasion to use.

Crimson	**Seal brown**
Scarlet	**Lemon yellow**
Jet Nigrosene	**Orange**
Walnut Crystals	**Malachite green**
Acid sap brown	**Violet**
Brown mahogany	**Blue**

Get some 4-oz. bottles and dissolve ½-oz. of each of the stain powders or concentrated stain liquids just named, labeling each one as to color. Apply each color to some test panels. Then try mixing certain colors and observe the results. Use some convenient method of measuring your mixtures and checking your results so you will know how to duplicate some of the desirable colors you produce. This way you will soon gain a definite practical knowledge of what happens when so much of a certain color or tint or shade is added to a certain quantity of another color.

Since most of the colors named in the foregoing list are some shade of brown, these browns may be mixed to produce different tones. Jet nigrosene will darken browns, running to the colder shades. Red will warm and light-

en browns, and is used in conjunction with regular brown to produce dark warm browns. Yellow and orange are used in small quantities for light browns that have a yellow or orange cast. Green is used to tone oaks and walnut that have a very red cast. The green will kill the red tone and, as a result, light brown shades may be produced that otherwise would be impossible.

The light colored sapwood areas on woods like walnut sometimes present difficulty when a finisher is striving for uniformity of color, as the sapwood will take a different color, even if a darker stain is used. Before anything is done to the wood, the sapwood areas should be stained to match the heartwood. This may be done by using an intermixed solution of crimson, blue and black. If a grey tone is prevalent, black should be allowed to dominate the stain mixture, with the addition of only small quantities of blue and crimson. If the hue of the natural wood is purple, the black should be used sparingly, and vice versa.

Non-Grain-Raising Stains

The powders used in this type of stain are exactly the same as those used for producing water stains. The effect is practically the same as with water stains—the same clearness of tone and non-fading properties. Their advantages are quicker drying and faster production. They are made by dissolving water anilines in carbon chemicals; only those dyes known as acid anilines are employed.

The methods employed in matching colors are about the same as those just described for water colors, except that concentrated colors in liquid form are used. Get a small glass that is graduated into cc's and add small quantities of the concentrated color to the stain reducer until the desired shade is reached. Red, orange, yellow, black and several shades of brown may be obtained in liquid form, and these are sufficient to match most any color required. Since these stains are generally applied by spraying, the operator can control the depth of color desired.

Ordinarily, filler does not change the hue of a stain colored wood surface materially but, in case of a variation, a slight change of tone may be obtained by adding more coloring to the filler.

Edward H. Mersman Dies

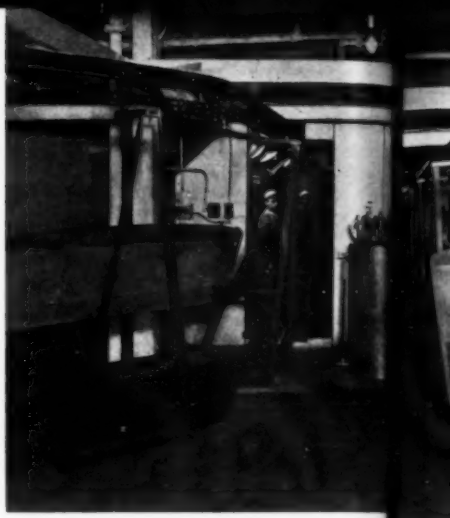
Edward H. Mersman, 67 years old, chairman of the board of Mersman Bros. Corp., Celina, Ohio, died at noon on Sunday, April 28. A lifelong furniture man, Mr. Mersman was one of the nation's most widely known furniture manufacturers.

Antarctic Paint Tests

What is said to be the first Antarctic test of paint finishes was completed when the U. S. S. Bear, flagship of the U. S. Antarctic Expedition under the command of Admiral Richard E. Byrd, arrived in Boston on May 18th. The ship carried panels coated with various paint finishes which were exposed to the sub-zero temperatures during the vessel's stay at the South Pole base.

This unusual paint test, planned by the Sherwin-Williams Co., Cleveland, was run on airplane finishes, implement paints, bulletin colors and on a number of industrial finishes and maintenance paints in a variety of colors. The U. S. S. Bear, formerly the City of Oakland and a veteran of previous antarctic expeditions, is of wood construction throughout and its transformation last year from a peeling, dingy hulk to a trim auxiliary vessel was considered a testimonial to the excellence of modern coating materials. The condition of the hull and deck finishes is now being studied by the company's chemists.

The saving in production costs evidenced by modern conveyor operation, is an accepted fact. From many installations which have been in use for one year or more, operators have verified real savings of substantial proportions.



Conveyorized Finishing is

THE EFFECTIVENESS of conveyor equipment in modern furniture plants is now an accepted fact. Conveyors are in successful operation in plants manufacturing furniture in all its classifications — case goods, chairs, tables, beds, living-room pieces, novelties and cedar chests, both in solid and veneered wood. The entire price-class range is also represented, from cheap borax to high-priced period furniture.

In an installation recently completed at the Memphis Furniture Mfg. Co.'s plant the quality, toughness, durability and high luster of the finish were improved to a marked degree. This was not an accident. It was the result of a thorough analysis of the demands made upon the system while it was still a thought on the draftsman's layout.

A well planned and engineered conveyor system will not in any way detract from the quality of the finish, but will improve it. A correctly engineered system should not demand anything unusual or freakish of the finishing material nor require that a new or untried formula be introduced to fit the conveyor. Rather, a modern conveyor system should provide ideal conditions so that standard materials will function satisfactorily.

Steady Movement Through Processing and Drying Areas

The mechanics of the conveyor itself are basically the transpor-

In the illustration across the page two men are at work applying the final spray coat of varnish.

On this side, to the right, part of the shading booth can be seen. Notice how these bed ends are supported on carriers.

Photographs, courtesy of the Palmer-Bee Company, Detroit.

Definitely Advantageous

tation of furniture from one operation to another and the introduction of operators who perform their work on the moving pieces wherever possible. In some instances, where operations consume an appreciable time element, it is necessary to remove the piece from the conveyor to perform the work.

As the work moves from one operation to another the thought of drying is introduced under such conditions that the temperature is always constant and the humidity is held at a percentage that will not disturb the balance of moisture in the wood itself nor the moisture in the air.

In the Memphis installation, in order to attain the desired results, the utmost care and thought were exercised in analyzing the conditions necessary to: 1) Provide perfect drying condition, 2) to see that ample space was available at the areas in which men could work with freedom, and 3) to make sure that the system would not impair but actually improve safety and fire prevention conditions.

Completion of Cabinet Work on 4-ft.-wide Slat Conveyor

After the case or cabinet is assembled in either of two case clamps, it is placed on either one of two 48-in.-wide slat conveyors. As these loaded slat (or apron) conveyors move along, all of the cabinet work is performed by skilled workmen — as the case moves through their respective

work stations. First the top is put on, then the back panel, and so on until the final sanding and inspection. At this point a "bank" or "cushion" is provided so that there is not too close a tie-in between the cabinet room and the finishing room. In this bank a minimum of one hour's production is usually provided so that if some interruption should occur in the cabinet room, such stoppage of the work would not prevent the finishing room from carrying on normally with its regular production.

Inasmuch as both beds and mirror frames require only a small amount of cabinet work, these items are not set up for conveyor operation in the cabinet department. However, upon completion of the cabinet room work, these items find their place in the storage bank just mentioned.

Discharge end of 48-in. slat conveyor in cabinet room where workmen on the line do final touch-up sanding in the white.

Handles Large Work; 1440 Cases in 8 Hours

The trays or carriers on this installation are placed on 6-ft. centers which will handle case goods as large as a 75-in.-high robe chest or one bed—that is, both head and foot boards of a bed. Mirror frames and bed rails can be handled on J-hooks spaced intermediately between the trays.

The conveyor system is operated at a speed that will produce 1440 cases or beds in an 8-hour day. So efficient has the management become in scheduling the work, and the operators along the conveyor in performing their duties, that many days the conveyor will operate without stopping for any reason whatsoever. A relief operator is available so that those in key positions can have relief at any time.

After the furniture has been taken from the storage bank, prior to being placed on the finishing conveyor, it is given a thorough and exacting inspection in the white. Rejects are set aside to be repaired and re-inspected before they are allowed to be placed on the finishing conveyor.

Sap Staining; Blending; Over-all Stain Spray

Upon entering the finishing room the conveyor travels through an area which allows for sap staining, blending and the like, before entering the regular stain booth.

The two spray operators in the stain booth have at their disposal four guns each, which covers the range of stains used in normal production. For the two major color items two 120-gallon pressure tanks of the agitator type are provided so that the servicing of tanks need only take place once a day.

Stain Wiping; Oven Drying

Immediately after the furniture leaves the stain spray booth it passes through the oil-stain wiping area, where seven wipers blend and wipe the work as it passes through a 50-ft. work station. Because these men have a definite place to work, good housekeeping is a simple matter. Their supply of wiping cloths is within easy reach, and containers for dirty and soiled wiping rags are only a few feet away; no need of throwing used wiping rags on the floor to be swept up or dragged away to some corner or confined place where they may become a serious fire hazard.

The next step in the finishing schedule is the stain drying oven where a temperature of 125°F. and a relative humidity of 35%, with 30 air changes per hour, are automatically maintained. The conveyor doubles back and forth through the oven for a period of 40 minutes.

In the design of this oven, as well as the varnish oven, the furniture is not subjected to an immediate heat of 125°F. As it enters the oven a temperature only slightly above room temperature is encountered; then, as the conveyor progresses on its travel through the oven, the heat is gradually raised to 125°F. Likewise, when the furniture approaches the exit, the temperature is gradually decreased. This desirable condition is accomplished by means of proper duct design and baffles.

Air-Dry Sealer; Sanding

Proper time for cooling is taken into consideration between the stain oven exit and the sealer spray booth. This latter spray booth is of the same design as the stain booth. It may be well to mention at this time that all of the spray booths are 20-ft. long, 8-ft.4-in. wide and 8-ft. high. Each booth is provided with two 34-in. exhaust fans with 1½-hp. motors.

Only one 120-gallon pressure tank is necessary at the sealer booth. Here also, two spray operators are required to apply the sealer.

No forced drying condition or

Workmen busy on the line wiping stain.

oven is used to dry the sealer. The conveyor travels back and forth for 40 minutes before arriving at the sealer sanding area.

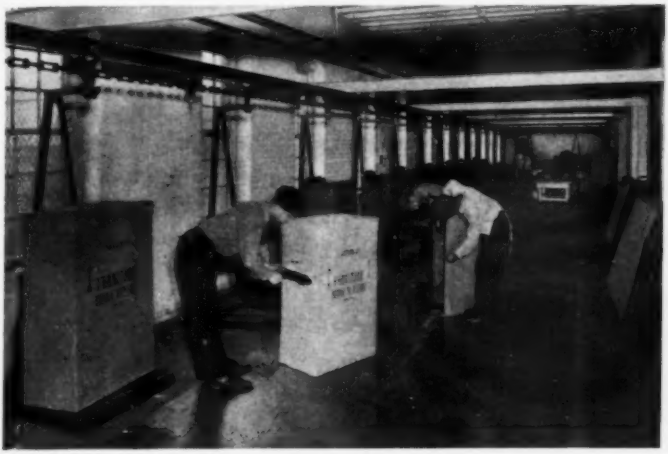
All of the sealer sanding, except on the small pieces, is performed without taking the furniture off the trays. After this sealer-sanding operation the furniture travels through the shading spray booth and then, after a 10-minute air-drying interval, it progresses through the final varnish spray booth.

Two Ovens for Varnish Coat; Prevents Case-Hardening

Two ovens are employed for drying the varnish coat. First the conveyor passes through a preheat oven which provides a temperature of 110°F. and 35% relative humidity, with 60 air changes per hour. Under such conditions there is no possibility of the varnish case-hardening. The frequency of air changes assures an easy escape for the solutions that evaporate rapidly. After an hour in the preheat oven the conveyor enters the final-drying oven where the temperature is increased to 125°F., with a relative humidity of 35%, but with only 40 air changes per hour.

After leaving the final drying oven the conveyor travels back and forth for 60 minutes to allow the furniture to cool and return to room temperature. Inasmuch as this furniture is not rubbed or polished it is immediately packed in cartons and taken to the warehouse or to the shipping platform. Even though the furniture is packed immediately, no "print-

The conveyor doubles back and forth several times inside each varnish oven, carrying trays of furniture through air that is conditioned and controlled for 3-hr. drying.



Finished furniture enters this room and is packed for shipment or temporary storage.

ing" of the finish has been encountered.

To accomplish these results no specially formulated finishing materials have been used. It may also be in order to state that the prices for the materials being used are in the same bracket as those paid before the conveyor installation was placed in operation.

New Handbook on Polymerin Speed Finish Is Available

A new handbook, "The Facts on Polymerin," is being distributed this month by Ault & Wiborg Corp., New York, N. Y., as a manual of information on speed finishing applications and methods.

The book describes how Polymerin industrial finishes are being used in various industries. Photographs show some of the products (such as washing machines, refrigerators, bicycles, Venetian blinds, stoves, and lamps) that have proved to be well suited to this type of speed-finishing operation.

Why Polymerin is different from conventional finishes, and how it depends on the intricate chemical action of polymerization for its rapid curing characteristics are also outlined in the book. There are certain variations of the original high-bake Polymerin formula which make it possible to adapt the Polymerin-type finishes to meet the specific requirements of individual jobs. The book tells how Polymerin-100 is being used where low temperature baking is desirable. Polymeroid, a hammered-effect Polymerin-base material, is designed for rough and porous metal surfaces.

Included in "The Facts on Polymerin" are pictures of finishing and baking operations. One photograph shows an infra-red baking setup, where the Polymerin baking schedule is under five minutes. There is a drawing of strip steel coating equipment, which bakes out Polymerin in 60 seconds.

This handbook is available to finishers who write to Ault & Wiborg, 75 Varick St., New York, N. Y.

Free Booklet Describes Scale and Rust Removal

Of special interest to works managers, superintendents and maintenance executives of metal-working plants interested in safe, modern methods of removing hard water scale and rust deposits from water-cooled equipment is a new 20-page, illustrated booklet just issued by Oakite Products, Inc., 57 Thames St., New York, N. Y.

Likewise, the Same Finishing Mate

That's why LILLY FINISHES are "tailor-made" and that's why we maintain and operate two complete laboratories—one at High Point, N. C., and one at Indianapolis, Ind. The one at High Point specializes in producing the latest and most modern types of finishes for furniture — from stain to final finish, while the

THE LILLY COMPANY

HIGH POINT, N. C.

This view shows section of the varnish and lacquer development laboratories at Indianapolis.

Corner in modern coatings laboratory at High Point, N. C.

Material Does Not Fit Every Need

one at Indianapolis specializes in developing both wood and metal finishes. These two modernly-equipped LILLY plants are prepared to formulate a finishing material to meet any specific need and to build into this material all the necessary qualities of a modern and practical finishing product.

LILLY VARNISH COMPANY

INDIANAPOLIS, IND.

Great Britain and Europe: Apply Jenson & Nicholson Laboratories, Stratford, London, England

The Recovery of Solvents

BY RAYMOND S. ANDERSON
Vice President of Solvents Recovery Service, Inc.

Contaminated solvents and dirty thinners can be salvaged for reuse, thereby making possible big savings in many factories which use quantities of these materials.

FEW PEOPLE, even among those who are intimately connected with lacquer and solvent manufacture and those in industries wherein the finishing of metals is an essential part of their business, realize that there is such a thing as solvent recovery on a scientific basis. Those who do, will immediately think of the systems in operation for the recovery of solvent vapors such as are extensively used in the artificial leather industries.

For years various lacquer companies have attempted the recovery of the solvents from their dirty wash-thinners and spoiled lacquers. Such attempts generally consisted in simply dumping the material, from which the solvents were to be recovered, into a still, turning on the steam, and what came over was called "recovered solvents." In many instances it was almost worthless because it contained too large a percentage of water or other foreign matter. When they did obtain a usable product, it was found that they had only recovered a small percentage of the recoverable solvents.

Analysis of Dirty Thinners; Treatment Accordingly

For some time several concerns interested in the sale of new solvents have been making a practice of recovering solvents for their customers. With certain types of solvents and for large customers, they have had some success. In other instances, this treatment has not been much of an improvement over the crude methods previously described.

In some cases as little as 50% of the possible return has been obtained and the recovered product was a delicate shade of buff. Another drawback to this form of operation has been that in some cases the dirty thinners of several small customers were placed in the still together and the recovered product prorated. Naturally, some users were benefitted at the expense of others.

About five years ago a method of solvent recovery was perfected by a Mr. Lewis Lofgren of Chi-

(Continued on page 47)

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PERSPIRATION RESISTING LACQUER

An ideal finish for products which are to be subjected to frequent handling since it is highly resistant to body acids.

Air dries in usual lacquer drying time but maximum resistance may be hastened by force drying.

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Infra-red Users Have PROVED That Ault & Wiborg's Infra-red Finishes Are Faster Curing, Harder, More Flexible

Not only in extensive laboratory tests, but in wide commercial service, A & W infra-red finishing materials have *proved* to have superior characteristics.

Polymerin-100, the new low-baking Polymerin* formulation, has shown itself to be ideally suited to infra-red applications. At large finishing plants, East and West, Polymerin formulations have helped manufacturers to achieve the amazing speed production schedules which new infra-red equipment makes possible. Polymerin baking schedules—already remarkably short—can be speeded up still further by applying infra-red principles. This has been proved in commercial production runs.

In some cases, where former schedules required bakes of an hour or more, infra-

tages. Ordinary baking materials often will not give satisfactory results. These

manufacturers to achieve the amazing speed production schedules which new infra-red equipment makes possible. Polymerin baking schedules—already remarkably short—can be speeded up still further by applying infra-red principles. This has been proved in commercial production runs.

In some cases, where former schedules required bakes of an hour or more, infra-red schedules, using Polymerin-100, have cut drying times to as little as 5 to 10 minutes! At one large automobile plant A & W finishes made it possible for an infra-red user to cut his light cost 30%, saving hundreds of dollars weekly!

With this amazing infra-red speed production and the money savings it makes possible, satisfactory film characteristics are being maintained. Standards for hardness, flexibility, adhesion and other qualities remain high, where Polymerin industrial finishes are used.

Ault & Wiborg infra-red finishing materials are being used successfully by many large manufacturers, including the National Cash Register Co., Dayton, Ohio. One of National Cash Register's infra-red installations is shown here.

New Finishes Specially Designed for Infra-red Applications — A & W research laboratories have studied thoroughly infra-red curing and infra-red finishing problems. They have developed new formulations, both finishing coats and undercoats, which for certain infra-red applications provide unusual advantages. Ordinary baking materials often will not give satisfactory results. These special A & W formulations have been designed to replace the old finishes, and make it possible for users to derive maximum benefits from infra-red systems.

If You Are Planning to Use an Infra-red Baking System, Remember that Ault & Wiborg has investigated carefully the problems of infra-red finishing. A & W infra-red finishes, developed through a comprehensive research program, have proved definitely that they cure faster and provide a harder, more flexible film. Take advantage of Ault & Wiborg's experience and research in this new field! Write for information on why A & W finishes will make it possible for you to achieve maximum results. An A & W infra-red specialist is at your disposal. Get the benefit of this specialized knowledge!

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cago, known as the Lofgren Process. This method has revolutionized the industry. It involves an analysis of each customer's dirty thinners to determine the proper treatment. Then, not one but sometimes many distillations are used, together with, in some cases, intermediate treatments which do not affect the original composition of the thinner. Furthermore, this system is so flexible that customers having as little as 200 gallons of dirty thinner, as well as those having a carload, can have their thinners cleaned economically. In some cases the savings have run as high as $20,000 a year for a single concern.

Part of the explanation of such large savings is that with the use of a modern process, the recovered solvents are a clear water white and so dry, free from acids and other foreign matter that they are being used not simply as wash thinners but as new thinners in production.

Recovered Solvents OK for Production

A sample of recovered solvents obtained by the use of this process was recently analyzed by what is reputed to be the largest chemical company in America. They expressed complete surprise that a recovered solvent could be so perfect and advised their clients that the client could safely use the recovered solvents in production.

As a result of the introduction of the Lofgren Process hundreds of concerns, who formerly wasted or sold as junk, their dirty thinners, are now sending them to solvents recovery services engaged exclusively in the recovery of solvents and, as a result, several thousand dollars worth of quality materials are being saved in dozens of industries manufacturing many divergent products from a small bottle of nail polish to a huge transcontinental motor truck.

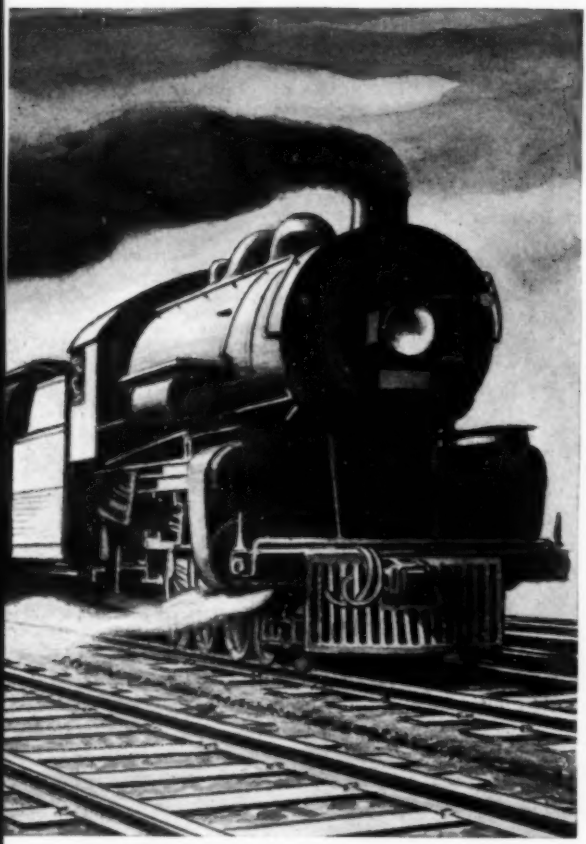
Technical Production Conference Held by New Wrinkle, Inc.

Attending the Technical Production Conference held by New Wrinkle, Inc., in Dayton, Ohio, May 17 and 18 in the interest of its manufacturing licensees, were more than 100 engineers and chemists.

The Technical Production Conference was held to acquaint wrinkle paint manufacturers with the problems arising from the increasing demand for wrinkle finishes. Brought to the attention of its licensees were all new developments, particularly the formulation of both varnish and alkyd types of wrinkles on which New Wrinkle chemists have been working for the past year. These

One of the exhibits included a flexible tunnel section for infra-red-ray drying.

California's two days **NEARER** *to N York*



DU PONT

DULU

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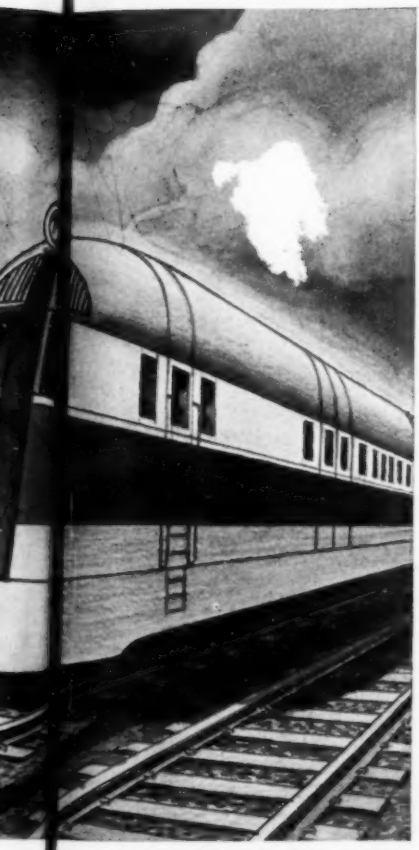

Furniture finishing need no longer take 29 hours from sealer to packer

Now you can do it with DULUX in less than 7½ hours!

IT'S NEW! This DULUX finish for furniture means *greatly shortened finishing schedules.*

1. Made to dry quickly, at elevated temperatures—2 hours at 150°... DULUX offers you a 5½-7½ hour finishing schedule from sealer to packer . . . as compared to the usual 29-43 hour schedule for varnish, and the 22-28 hour schedule for lacquer. DULUX also saves time because it's easy to rub.

2. The unusual build of DULUX means that you need only one coat, instead of the two coats usual with lacquer. Material savings up to 30% are possible.

A faster production line than you've ever had is now possible with these two *different* advantages of DULUX. You'll like the character of DULUX, too. It has a clear, bright film with excellent depth of appearance. It has the resistance to cold cracking, scratching, printing, marring, water and alcohol you expect from high quality lacquer.

In fact, DULUX is a finish that combines the flow and build of varnish and the speed and quality of lacquer.

If you are interested in streamlining your production line, investigate DULUX—the finish that again fulfills the Du Pont pledge: "Better Things for Better Living ... through Chemistry." For full information, write E. I. du Pont de Nemours & Co. (Inc.), Finishes Div., Wilmington, Del.

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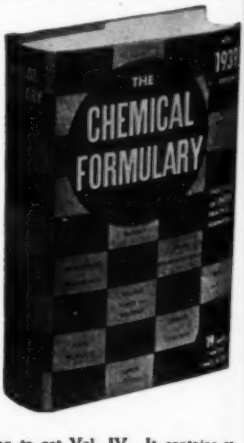
The experience of hundreds of chemists and engineers is now available to you. Use it and profit. *Have at your finger tips the boiled-down essence of the latest commercial methods of hundreds of chemists, engineers, technicians and professors. Have it when and where you need it.*



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Part of the group attending New Wrinkle's Technical Conference on May 17 and 18, at Dayton, Ohio, visited the National Cash Register Co.'s. establishment to observe the application and infra-red-ray drying of wrinkle finishes on a production basis.

new formulations were shown and demonstrated in the laboratory in the presence of every one.

In addition to New Wrinkle's latest disclosures on matters of manufacturing and formulation, considerable attention was given to infra-red ray drying.

The conference included a discussion of basic materials and methods of manufacture, which was led by Mr. William A. Waldie, Technical Director of New Wrinkle, Inc.

Attention was also devoted to proper application and the correct technique used in spraying wrinkle finishes. Several of the latest developments in spray equipment were shown and their outstanding features were explained and demonstrated. The subject of finishing room control as applied to wrinkle materials and spray equipment was discussed.

It was further brought out that while the responsibility of a high grade wrinkle finish ends with the shipment, the paint maker is interested in its proper application and that in many cases the method of application has an important bearing on the formulation.

This spraying demonstration was immediately followed by a factory inspection trip to the National Cash Register Co. where finishing with wrinkle was seen on a production basis. Here the attending licensees' representatives had a first-hand opportunity to study the relative merits of infra-red lamp drying and oven baking.

Mr. Hendricks of the Dayton Mfg. Co. told the group that for the last two years his company has applied their experience in specialized lighting toward developing reflecting equipment for directing infra-red energy for baking wrinkle finishes and other painted surfaces.

The drying equipment demonstrated featured a deep-bowl gold-plated reflector which is designed to project an even spread of intersecting rays. Because of its depth this reflector directs all lateral rays onto the work, keeping "spill" rays at a minimum. Energy from this type of reflector is controlled in such a manner that sufficient quantity is directed onto the leading and following surfaces of an object passing on a conveyor.

At the Dayton Engineers Club, representatives of the Fostoria Pressed Steel Corp., manufacturers of "Para-Sphere" reflector equipment for the infra-red process, presented one of their standard flexible tunnel sections for inspection by the conferees.

Saturday afternoon the laboratory facilities were thrown open for use of those present and various new varnishes were actually cooked; several new formulas were discussed in an informal open meeting.

Due to the enthusiasm displayed by the attending licensee representatives it is probable that New Wrinkle, Inc., will make these technical sessions at Dayton an annual affair. In addition, it is contemplated that New Wrinkle, Inc., will put on a similar demonstration next fall in the interest of users of wrinkle finish.

Spray Hazards

We would appreciate it very much if you would give us some information on the dangers of paint spraying. In booth spraying, is it considered dangerous to spray lacquer and then shift to enamel without cleaning the booth? Sometimes when spraying large pieces our spray room becomes filled with fog. How thick must this be to become a fire hazard?—K. J. Co. (Specialties).

Yes, most authorities declare that you are presenting a fire hazard (possibly an explosion hazard) to alternately spray lacquers and oil enamels in the same booth without cleaning it when changing materials.

When lacquer fumes are so strong in the air as to be very disagreeable to people working in the area, they are very close to or right at the danger point for an explosion in case a spark or small flame is made in this working area, as in lighting a cigarette, smashing an electric light, sparking from an electric motor or electric switch, or from steel striking steel.

For further information on this subject, write the National Fire Protection Association, at 60 Batterymarch St., Boston, Mass.—ED.

Cost of Custom Finishing

We have operated a custom manufacturing plant here (a city in Tennessee) for the past 20 years. Our products consist chiefly of shapes furnished to other manufacturers, with porcelain enamel finish.

There is some demand, although very slight, for a custom enameling shop for organic finishes. We wonder if there is any price information or papers compiled on jobbing enamel business for synthetics, such as might be operated here in the southern territory?

While we do a small amount of synthetic finishing on certain products, we know very little in regard to actual costs, possibilities of profit and the operation of a custom finishing department, and we would be interested in such information if it is available.

Perhaps you can suggest or furnish from your own files such information as may be available on the subject to the trade.—H. D. Co.

To answer your inquiry one should have more information as to the kind of articles you plan to finish. However, I can say this much: The cost of finishing any article in any kind of a decorative covering is based on: 1) the amount of coverage per gallon of finish used; 2) how many coats will be necessary; 3) whether it is a one-coat job or will have to be built up with undercoats; 4) the rate of production; 5) the

Questions; Answers

Questions are welcome and will be answered promptly by mail. Readers are invited to prepare and send in additional information relating to any of these questions and answers.

CAMPING DAYS are happy days! Make your product reflect the spirit of the occasion . . . with colorful MULTIFORM, the newest and most popular novelty finish. Two colors add brightness and attract the eye. Both colors sprayed with only one handling operation. Smooth as porcelain! Easy to keep clean! Heat-resistant and chip-proof! Camping equipment manufacturers will find MULTIFORM just the finish they need to give their products added sales appeal. No production difficulties. Cuts reject losses. Finishing costs compare with smooth enamel. Let us finish one of your products in MULTIFORM. No cost. No obligation. Write for information.

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method of application. To give you any real assistance in solving your problem, one would have to know more about what you propose finishing. Of course, by knowing the prices of synthetics, lacquers, paints, etc., per gallon, a test of actual finishing should soon tell what the costs would be.

Prices of such finishes are available for the asking, from any paint company, and today salesmen are accommodating. They will go into a factory and demonstrate willingly.

It is not difficult to make these tests and then actual costs can be arrived at quickly.

Having costs of material and rate of production, the overhead cost can be added and a definite actual cost can be determined.

The cost of finishing our own custom finished jobs is figured by our estimating department—working with the factory in arriving at a safe estimate. Special jobs coming in are usually given to me to figure the actual finishing costs. Then the estimating department uses my figures in connection with their estimate of the work.

Perhaps, if I knew just what kind of products you expect to finish I might be able to give you something more definite.—W. K. Perdue (Foreman Finisher).

You have put up a hard question to be answered offhand, as anyone who could answer it satisfactory would have to be much better informed as to what you intend to finish. A finisher could give you a better answer if he could have a personal interview with you.

The cost of finishing an article in a custom shop will depend upon the square inches or square feet of surface to be covered and the number of square feet a gallon of material will cover; then the time it takes to prepare and finish the article; also your overhead expenses must be figured in to give the actual cost of production. Another thing to be considered is the way the finishing material is to be applied—whether by spray, dip, brush, roller coating, etc. Then, in custom work, the finisher has to change his finishing materials more often than on general production. Custom finishing really calls for a finisher who has had years of experience in a custom shop—one who is an all-round man in the finishing line.

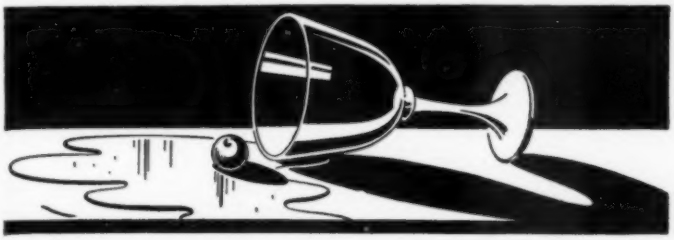
I think if you have a good finisher—one who has had plenty of experience—you could build up a good custom business there in your city as it is well located. I have lived there and once had charge of a large metal-finishing department in one of the local plants.

Getting back to the question of cost, I do not think you can find any standard for cost for custom finishing, as it is all figured by gallons of materials used and the square feet that it will cover, plus the time it takes to do an article, plus overhead expenses.

If I were in your factory and could see your production I might be able to help you. I hope you can get something out of this brief general reply.—L. A. Van Arnam (Foreman Finisher).

I do not care to be quoted or in any wise connected with the following information, as it would only create a lot of useless discussion.

Job-shop finishing prices are



Here's a Furniture Finish that Licks King Alcohol

It's the new Glidden "500" Line and it's more than a match for old King Alcohol at his full strength. It will take him on at 100% pure grain and never show the slightest effect. Tough? You bet . . . on any furniture material. One manufacturer uses it to make cocktail trays of composition board 100% resistant to alcohol.

594 LACQUER SEALER **595 GLOSS LACQUER** **596 FLAT LACQUER**

These produce a finish that will give any furniture product more sales appeal and stronger talking points. A finish that resists marring and extreme temperature changes. The "500" Line gives manufacturer and customer satisfaction. Ask the Glidden man for a demonstration of what it will do for you.

THE GLIDDEN COMPANY
National Headquarters, Cleveland, Ohio
Factories or Branches in Principal Cities

arrived at and determined in general, by competitive bidding. No accurate basis of estimating is used. Trial runs are sometimes taken to prove out a seemingly low price offered by the purchaser.

A rule of thumb method commonly used to set a tentative price, is to estimate the amount of materials required for a run and then set the selling price at four times the material cost. This applies to all types of finishes.—M. H. P.

Solve Decal Trouble

I have read with interest an article about Decal trouble, in the Questions and Answers section of April issue of INDUSTRIAL FINISHING, page 50. The article refers to trouble which a reader has had with the application of decalcomanias.

Since we use large quantities of decalcomanias in the Spalding Plant (A. G. Spalding & Bros., Inc., athletic outfitters, Chicopee, Mass.) as a decoration on tennis rackets, and as our use of these has covered so many years that questions and answers have come up and have been explained many many times, we feel qualified in making suggestions to help your reader, F. H. S.

If F. H. S. is securing decalcomanias from abroad, he may be using what is known as a varnish type decalcomania. If this be the case, my first suggestion, to eliminate his trouble, would be to contact an American source for water slide-off decalcomanias.

Bubbling or burning of the decalcomanias is known to be quite common wherever decalcomanias are used. The explanation which we have always found to be the answer for this problem is that—

1) All of the excess water and air had not been removed from the underside of the decalcomania prior to the time that the clear lacquer coating was applied over the surface.

2) The decalcomania had not thoroughly dried out.

In the application of decalcomanias here at Chicopee, we dip the decalcomania in lukewarm water and, just prior to removing the decalcomania from the paper for application, we wipe a damp cloth across the surface to which the design is to be placed and immediately transfer the design. A rubber squeegee is then used (black flexible sheet rubber 1/6-in. thick) in much the same manner as one would clean windows, which is to hold the squeegee at a 45° angle and brush it across the surface so as to force any excess water or air that may be under the design out towards the edges. At least four or five hours is then allowed for the drying out of these decalcomanias before an application of clear lacquer; and since this would usually result in an expense due to lost time if this work were to be held up during the daytime, we plan our production so that the decalcomanias are applied during the latter part of the afternoon, and can be dried overnight ready for the first coat of lacquer the first thing the following morning.

If bubbling or "burning," as it may be called, continues then the water slide-off decalcomania company supplying the decalcomanias can supply you with what is known as a decalcomania cement —a cement made expressly for sticking decalcomanias to wood surfaces where bubbling or burn-

for

the INDUSTRIAL and TECHNICAL trades

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OXFORD VARNISH CORP.

DETROIT, MICHIGAN

ing occurs. This is applied by mixing the solution with a given quantity of plain water, and then using it to wet a rag cloth which is squeezed out so that the cloth may be termed as only damp and not saturated. This rag containing the booster cement is used to replace the operation of using the damp rag containing water only, and the decalcomania is applied as soon as convenient in the manned described in the foregoing paragraph.

Should you still find "burning" of the decalcomanias, then it may be due possibly to your applying the decalcomanias on wood that has been filled and which has not previously had at least one coat of lacquer. *Decalcomanias will not stick directly to filled wood for the reason that all filler contains a certain amount of grease or oil.* In the application of decalcomanias to tennis rackets, we have always found it necessary to first apply one coat of lacquer on which the decalcomanias are placed.

I feel confident that if these suggestions are followed, F. H. S. will have no trouble in the future with the application of his decalcomanias.—A. L. WESTON, Asst. P. A.

Three attractive pieces in a blond bedroom suite made in Los Angeles, Calif., and exhibited at the L.A.Furniture Mart.

Lacquer Blushing

We have a lacquering problem when the relative humidity goes about 50%. At the present time we use a centrifugal machine in a room approximately 8-ft. wide, 14-ft. long and 14-ft. high, which is fairly well enclosed. When the humidity is excessive, "blushing" occurs, which is probably a very familiar problem to you.

We would like to know the most economical and best method we can use in order to be in a position to work on those very sticky days. We have been getting little results with lump calorides, but not too satisfactorily. Is there any small inexpensive dehumidifying unit that you might recommend?—F. R. Co. (Metal Photo-Frames).

Probably the practical and permanent remedy for the blushing you complain about is to air condition your finishing room. This is a problem to be handled by an engineering or heating firm that is thoroughly familiar with this kind of work. Then your finishing work can proceed satisfactorily, economically and on schedule at all times, regardless of outside weather conditions.

Until you do have your finishing room completely air conditioned, you might try using some kind of portable dehumidifying units and also use what the trade

SAVE FROM 1 to 3 Operations WITH TRIPLEX Stain

In Triplex Stain the background color penetrates, giving the rich, warm undertone usually obtainable only with a separate toner application. Triplex Stain uniforms and permits high-lighting, at the same time retaining a transparent appearance. It has more body than other stains, making succeeding coats stand out better. Triplex Stain may be sprayed, dipped or brushed. Sealer may be applied over it without waiting as it will not rot lacquer finishes, nor retard the drying of top coats.

Triplex is available in rich shades of all desired colors for close grained woods. It actually saves from one to three operations in toning, sealing, sanding, glazing or wiping. Produces high grade color effects, but makes the finishing operation quicker and more economical.

Mention your color requirements and submit panels or carvings from your regular production for demonstration of Triplex Stain.

JAMES B. DAY & CO. CHICAGO

calls a "retarder" for thinning your lacquer. The retarder properly used in lacquer, slows the lacquer's rate of drying and, other conditions being favorable, prevents blushing.—ED.

Anodic Treatment for Aluminum

The government specifies an Anodic treatment for aluminum alloy before painting. Can you or any of your readers supply us with an explanation of this process, what materials and what equipment are necessary?—W. C.

Since the Anodic process is patented, we cannot give you its technical details or specific information concerning the equipment used.

In a booklet entitled "Finishes for Aluminum," published and copyrighted by the Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa., we find the following paragraph:

"Anodic coatings may be applied to aluminum in chromic acid electrolytes. The coatings formed in this way are employed primarily as a base for paint because of their resistance to corrosion. The typical procedure consists of treating the aluminum as anode in a 3% to 10% chromic acid solution."

For further information about this, we suggest that you consult your local representative for the Aluminum Co. of America, or write the Aluminum Co. of America at their Pittsburgh headquarters. We feel sure that in this way you will obtain exactly the information you desire.—ED.

Fire Prevention Ideas

THIS ARTICLE deals with various phases of daily routine in the finishing room that should be uppermost in everyone's mind.

1) Dirty rags present a real fire hazard, as they are often left lying around in a corner, forgotten, not spread out, sometimes carried in overalls and left in lockers overnight. This applies particularly to rags used in the filling room. Nor should rags be placed on radiators to dry at any time. A sure cure to stamp out this dangerous element is to supply each worker or each department with so many rags each morning and have them signed for; then, in the evening, have them picked up again. If any rags are short at this time, this department or worker should not be allowed to go home until the missing rags are found.

This system has been working successfully for some of the larger firms. While it may be a little more expensive it definitely is good fire insurance.

These rags can be supplied by any laundry that washes mechanics' overalls, etc., or they may be washed in your own plant. The dirty rags should be submerged in water each evening (if they are not washed that same evening) and kept there until the laundry calls for them to be cleaned.

2) The finishing room should be equipped throughout with explosion-proof electric service sockets and outlets as well as vapor-proof lights. In some cities these are fire insurance requisites.

3) Spray booths should be equipped with a sprinkler system and the booths should be cleaned thoroughly at least once a week.

THE *Beauty* AND THE *Beach*

The dreary, monotonous beach littered with sandgrass and driftwood, becomes alive with alurement and charm when the comely beauty embellishes the sand with her shapely figure.

The Beauty completely transforms the Beach by merely adding a magnetic Finish.

It is equally as simple to transform dreary appearing commercial products into alluring, attention-compelling articles by adding a beautiful finish . . . not with fair damsels, but with the proper selections and applications of stains, lacquers and paints. Our creative studio is at your service without cost or obligation. Let us tell you how we can help solve your finishing problems.

FREE . . . A larger print of the above illustration, suitable for framing, will be sent upon request.

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Manufacturers of Finishing Materials

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For Moulded Plastic Products

Johnson's new finish, Wax-O-Namel (enamel containing wax) is now available for molded plastic products. Manufacturers of plastics will be interested to know that Wax-O-Namel is an excellent finish for molded plastic radio cabinets, hardware, display stands, etc. Applied without benefit of prime coat and baked at 225°F., it produces a tough coating with excellent adhesion and a full, wax-like luster heretofore impossible with one coat. Write S. C. Johnson & Son, Inc., Industrial Division, Racine, Wisc., for complete information on Wax-O-Namel.

"Zaponol," Zapon's New Wood Stain

Perfection of "Zaponol," its revolutionary new wood stain material, is announced by the Zapon Division of Atlas Powder Co., Stamford, Conn. According to the company's announcement, Zaponol combines the best features of stains previously available but it has, in addition, two valuable properties heretofore unknown in wood stains. These are a sealing effect and controlled penetration. The basis of Zaponol and the secret of its unusual effectiveness is a new synthetic resin developed by Zapon and produced exclusively for this new stain. The new stain contains regular water stain powders to produce the utmost in brilliance and light fastness. Coloring materials are dissolved in the water solution of the new resin to obtain Zaponol's unique effects.

Zaponol eliminates a wash coat for most work. "It sizes as it stains." This remarkable sealing effect, due to the resin base, allows controlled penetration by which all surface fibers are uniformly stained so excessive penetration of the material is prevented. The material is non-soluble in subsequent finishing materials and is unaffected by them, giving added brilliance to the finish. When it dries, loose fibers are firmly set up on the surface and may be removed with a light sanding. They will not rise again during subsequent operations. Tear-outs are eliminated.

In addition to eliminating a wash coat, Zaponol gives remarkable uniformity of results. This latter is particularly appreciated when working with porous or soft woods and mixed woods.

Zaponol may be readily applied by the usual methods. No new equipment is needed nor does any new technique have to be acquired. The base, a clear water-white liquid, is also made available so that desired stain powders can be added on the job.

The Zapon Division has prepared a very complete brochure, including sample wood panels, which will be sent upon written application to furniture manufacturers and others in the wood finishing field.

New...

MATERIALS
SUPPLIES
EQUIPMENT

Rubbing Compound

A compound designed especially for hand rubbing lacquer finished surfaces rapidly and economically is included in several newly developed and improved products manufactured by D. C. Cooper Co., 20 E. 18th St., Chicago, Ill. It is useful for rubbing high grade lacquer finishes of every description; comes in 1-gal. and 5-gal. cans and in 30-gal. and 50-gal. drums.

According to directions this compound must not be applied directly to the work. Small amounts are

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Ewing Galloway, N. Y.

Industrial adhesive tapes play an important part in the happiness that toys give to millions of children.

Industrial adhesive tapes are used extensively for exact color separation, striping, protection of finishes, surfaces, edges, woodwork; to prevent scratching and chipping, to hold movable parts in place and for protection in shipping.

Consult our laboratory about your special tape problem, without obligation.

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The Paper Backed Tape

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Fine Cloth Tape

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Coarse Cloth Tape

★ **UTILITAPE**
Waterproof Cloth Tape in Standard Colors

ELECTAPE
With Flexible Bakelite Coating

★ **METACEL**
Metal Foil Backed Tape

★ **TEXCEL**
The Cellophane Tape

•

Samples on request

placed in cheesecloth or other open-weave soft cloth, the cloth is rolled into a ball and then applied to the lacquered surface, the workman rubbing lightly one way. When the desired surface has been obtained, polish off with a clean soft cloth of same material. For a high glossy surface, finish up with DC auto polish.

Portable Baking Lamp Unit

A portable baking lamp designed primarily for baking or quickly drying high-heat enamels on touch-up repair jobs is announced by Op-A! Electric & Mfg. Co. (specialists in electric heating devices), 1939 Martindale Ave., Indianapolis, Ind.

As shown in Fig. 1, a 1000-watt assembly (four 250-watt R-40 reflector drying bulbs) is mounted on an adjustable horizontal arm supported by a tall slender pedestal which is fastened rigidly to an X-frame base that has four ball-bearing casters. The horizontal bar is adjustable vertically from a point close to the floor to as high as 6-ft. above the floor. The 4-lamp reflector can be tilted on the bar to any possible angle required.

From one to six of these 1000-watt units can be mounted on a single vertical pedestal as shown in Fig. 2. Each unit is supplied with a 12-ft. cord and plug, with switch control placed in the rear of the housing. These units are available from stock, wired for 110-120-volts and 220-240-volts.

Fig. 1—Showing one 4-lamp reflector unit mounted on the portable pedestal.

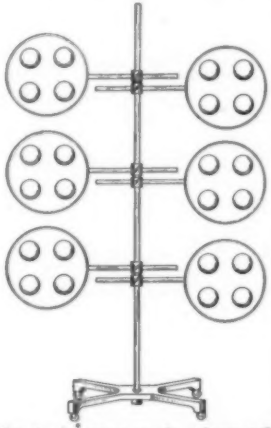

Fig. 2—As many as six 4-lamp reflectors can be placed on the one portable stand and adjusted to any position desired for the spot baking of a freshly repaired finish.

The portable unit, fitted with one or several reflector lamp units, is convenient for baking spot repair finishes on automobile bodies, metal cabinets of all kinds and various other types of work having either smooth or wrinkle enamel finishes.

Wrinkle Finish Without China Wood Oil

New Wrinkle, Inc., Dayton, Ohio, announces a new process of manufacturing a highly satisfactory and improved wrinkle finish without the use of China Wood oil. This announcement is of special interest due to the fact that, as is well known, wood oil has advanced from 12c to 28c a pound. Up until this time China Wood oil was considered essential due to its wrinkling qualities in the manufacture of these finishes.

This development has been the result of six months' work in the interest of wrinkle finish consumers, in order to assure the supply of high-grade wrinkle finishes at reasonable prices. The base used is "Dehydrol," a new castor oil product being produced by the Sherwin-Williams Co. in a new plant especially built for this purpose.

Another New Wrinkle announcement is "Wrintex," a new resin. While innumerable resins are on the market, New Wrinkle, Inc., has been devoting a considerable part of its laboratory effort toward the formulation of a new resin possessing unusual wrinkling characteristics which will facilitate more certain the manufacture of wrinkle finishes and which will offer the licensee manufacturer a product especially compounded for his purposes and one that should be of great value in assuring uniformity of result in successive batches.

Among its characteristics as a wrinkling vehicle, "Wrintex" offers economies due to its high viscosity, freedom from gas-checking, positive uniform wrinkling even on thin coats, and an ability to produce a highly satisfactory wrinkle texture, even after an overnight air-drying period. "Wrintex" is to be made available to all of its licensees by New Wrinkle, Inc.

Here's an

ENTIRELY NEW DEVELOPMENT

in finishing materials, backed by more than 80 years experience

THRESHER PER-FEX-ION SYN-AMEL SERIES 600

FOR: Refrigerators, Washing Machines, Kitchen Cabinets, Hospital Equipment, Metal Specialties, etc. This product has:

1. Excellent Resistance to water, soap, stain, and grease.
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Baking schedules to suit convenience — white, black and colors.

Further Information and Samples Will Be Furnished on Request.

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THRESHER VARNISH COMPANY

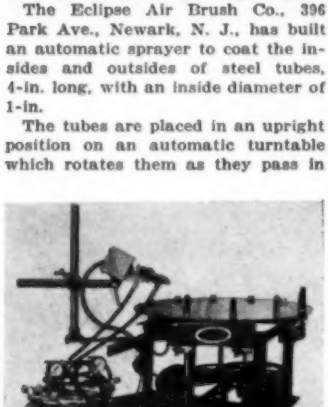
DAYTON, OHIO

Paint — Varnish — Enamel — Lacquer

Automatic Tube Sprayer

The Eclipse Air Brush Co., 396 Park Ave., Newark, N. J., has built an automatic sprayer to coat the insides and outsides of steel tubes, 4-in. long, with an inside diameter of 1-in.

The tubes are placed in an upright position on an automatic turntable which rotates them as they pass in



Coats insides and outsides of small tubes.

front of a solenoid-operated spray gun, synchronized with the action of the turntable.

A treadle operated spray gun coats the insides of the tubes as they are set into a holder on a stationary table. The setting and removing of the tubes for both inside and outside coatings are manual operations. Production on this work is 1200 tubes per hour for the outside, and the same for the inside.

New Chemical Company

William B. Lawson, formerly of The Harshaw Chemical Co. and The International Nickel Co., announces the formation of W. B. Lawson, Inc., dealing in industrial chemicals, oils, and non-ferrous metals. Offices are in the Union Commerce Building, Cleveland, Ohio.

According to Mr. Lawson, President, the new company offers a personalized buying and selling service based on his years of experience, his broad contacts in chemical and metal trades and a highly specialized knowledge of many markets.

Cleaning Spray Booths; Salvaging Waste

SPRAY BOOTHS in a furniture manufacturing plant were being lined with heavy wrapping paper to avoid the problem of trying to remove deposits from the walls. Use of the paper, while catching most of the over-spray, was not entirely satisfactory. The paper would sag, pull away from the clips and leave exposed spots upon which the accumulations would build. This, in turn, left an uneven surface over which to hang the next papering.

A shift to the use of a medium cup grease was suggested and put into effect. Walls and roof of the booths were cleaned thoroughly and then coated by hand with grease. This grease became semi-dry on the surface, sufficiently to permit deposits to build up, but it could be scraped off readily when cleaning a booth.

Under this plan an average of 250-lbs. of A-2 grease was used per month. Thinning the grease with P. & V. M. naphtha to the consistency of heavy paint permitted the grease to be applied with a brush, cutting the quantity required to around 175-lbs.

Finally a batch of grease was thinned to a consistency suitable for spraying. Better coverage was obtained and a check on the grease consumption showed that the job could be done on a monthly requirement of about 125-lbs.

The material obtained by scraping down the walls could be reclaimed for re-use more readily than when it contained paper scrapings. The coating was scraped off and replaced every time a new color or different finishing material was used, to permit salvage of each finish in uncontaminated state.

Use of the spray gun for coating the booths also solved a vexatious ventilation problem. The exhaust duct leading from the booths would gradually become clogged with hardened finishes and cut down the area available for air passage. With the spray method of application and an extension handle on the gun, the grease coating could be extended for a distance of some 6-ft. into the duct. This coating, when covered with over-spray, could be raked down with a curved scraper, and the full vent area maintained.

Generally the booths and exhaust ducts are cleaned and relined with the coating of thinned grease after productive operations stop at the end of the day or week. This gives the naphtha time to evaporate and the grease film time to become semi-hardened before operations begin next morning.

Supplementary Information

In order to answer the Editor's question about how these scrapings of over-spray are salvaged, I took up this matter with the superintendent of the plant involved and was given the following information:

The scrapings are first dried, to prevent sticking together in unmanageable masses; then washed in a laundry tumbler in cold water to which has been added a small quantity of Oakite (¼-oz. to the gallon of water). The dried chips are washed slowly, rinsed in clear cold water, then again dried before being worked up into new finish. "The usual solvent," according to my informant, is used when rework-

An aluminum—glorified by TOUSEY

No. 1 CHROMELUME

A Ready Mixed Aluminum Which Combines the Following Qualities:

1 — Extreme brilliance.
2 — Fifteen minute air dry.
3 — Will not rub off after ageing.
4 — Covers 2,000 square feet per gallon.
5 — Will not settle or pack in tank or container.
6 — Can be dipped, sprayed or flow coated.
7 — Retains its brilliance indefinitely inside.

We believe no other similar type of finish has the above seven qualities in one material. There are other Chromelumes for such purposes as outside durability, water immersion, heat resistance, etc. A full description of any of these materials will be sent on request. Address your inquiries to the . . . .

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BRONZE PASTES
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maintains an engineering staff that is available for consultation service at all times. They will be glad to make suggested designs and layouts of your industrial ovens and complete finishing systems. This is another of the many GKS services that are available without cost or obligation to you. WRITE TODAY.

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MANUFACTURERS OF INDUSTRIAL OVENS AND COMPLETE FINISHING SYSTEMS

ing the salvaged material.

The salvaged finish is not mixed with or used in place of new finishes on first grade products, but finds a place in the department devoted to the finishing and refinishing of "genuine" antiques. The processing of the material gives it a cast or faint cloudiness which closely matches the ageing of finishes actually applied in our grandfather's time. Also, although new finishes are sprayed on, this reclaimed finish is brushed on—presumably to give the brushed-on appearance which is sometimes erroneously supposed to mark the genuine heirloom.—E. STERRETT.

Sanding Before Wood-Finishing

I WOULD like to give my opinion on what I consider the proper method of sanding to prepare furniture for the finishing department—in order that the foreman finisher will have at least a fair chance to show what he can do in producing a clear finish that will enhance the natural beauty of the wood, and do it at the least possible cost.

The matter of what grades of abrasive paper to use in roughing off the surfaces before they reach the final stage, or rather the fine belt stage, can be left to the foreman of the sanding department, although care must be taken here that the jump is not too great between the coarse rough-off paper and the next grades used. A coarse abrasive will cut into the surface considerably and, unless the proper grade is used next to the coarse grade, the cutting marks or scratches will not be entirely removed, and a poor surface will be the result. Incident-

ally, more expense will be incurred later in removing these scratches with a fine grade belt.

Now for a little special treatment which, at very little cost, will make a great improvement in the appearance of the finished article:

Before the pieces are given their final sanding with a fine grade belt, a sponging with clear lukewarm water will raise the grain and also raise any bruises that may be in the wood. The only extra cost over the regular sanding cost is the sponging. The benefit derived will more than offset this increased cost. Of course, care must be taken that the final sanding does not cut down through the surface, below the level that has been reached by the sponging, as this would destroy any value of the sponging.

The result of the sponging is a smooth clean surface on which to apply the finish. The advantage is apparent whether it be a water stain or any other kind. In the case of water stain the advantage is just this: After the stain is dry on a piece that has been sponge-treated. it will be found that the water staining has hardly raised the grain, consequently the stain-sanding operation is much easier and there is no washed-out appearance as is often the case when the stain coat has to be sanded so much to make it smooth.

The advantage, in the case of woods that are to be filled or stained with a pigment wiping-stain, is that the sponge-treated surface comes from the sand belt without any of the fine fuzz or rough grain that will hold filler pigment or stain pigment and cause a cloudy or muddy appearance in the finished article.

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We offer to all industries equipped for baking finishes this highly perfected, heat-converting, synthetic enamel.

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We have combined to an optimum degree the necessary qualities of tremendous hardness, great adhesion, smooth lustrous gloss, and freedom from haze, discoloration and wrinkling.

FORM-A-ROC

Baking schedule is of great flexibility, permitting from 5-50 minutes at 250-375° F.

FORM-A-ROC

No matter which of the present worthy finishes of this type you may be using or planning to use we sincerely recommend that you investigate

FORM-A-ROC

MADE BY

THE VARNISH PRODUCTS CO.

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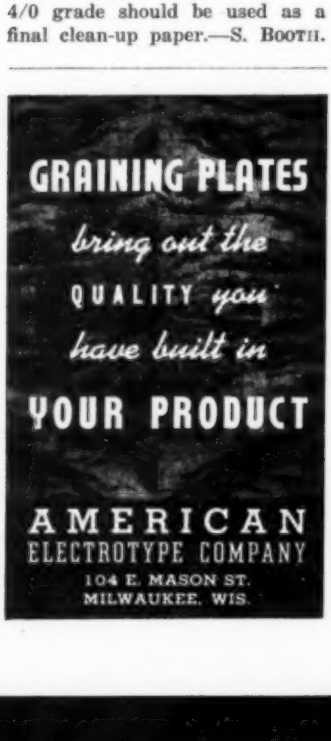
CLEVELAND, O.

The matter of what grade of sand belts or sandpaper to use for final sanding is one that has caused much controversy between cabinetmakers and finishers ever since furniture has been made. It has been a matter of amazement to me to hear cabinetmakers and sandermen argue against the use of a fine grade paper for smoothing off furniture before sending it to the finishing room. It is my firm conviction that it is money saved and a superior finish achieved if wood surfaces are properly prepared in the cabinet department for the finishing room. Also, I believe that, on medium and better-grade furniture, no abrasive paper coarser than a No. 4/0 grade should be used as a final clean-up paper.—S. BOOTH.



Light-Painted Finishing Rooms Are Best

IT IS WELL AGREED that an attractive and durable finish is one of the most important factors in the salability of a product. Design, engineering and manufacturing sections exert every effort to secure a finish combining quality with the most customer appeal.

But what of the paint used on the walls and ceilings of the finishing room? Has as much thought been given to its selection and maintenance as to the finish on the product being manufactured? Has any consideration been given to the psychological effect of the paint on the workmen, to the savings which can be realized if advantage is taken of the light-reflecting and heat-radiating characteristics of certain types of materials?

For example, the psychological effect of dark and dingy surroundings on workmen is important. Although it is one of those accounting intangibles and difficult to evaluate in terms of dollars and cents, it cannot be underestimated. A finisher's work, by its very nature, must be clean if rejects are to be kept at a minimum. If the finishing room has not been painted for a long period, or if a cheap dark paint has been used, the whole impression is one of neglect and dirt and these conditions are bound to result in costly slipshod work.

Equally important are the physical effects of the kind and condition of the paint used. Dirty or dark colored paints are low in light reflection value, and it is obvious that poor visibility results in lowered efficiency and increased rejections. On the other hand,

light colors such as white or cream possess remarkably high reflectivity. Walls and ceilings painted with such materials and kept clean do much to make use of all the available light, be it natural light afforded by windows and skylights or artificial light from electric lamps. In addition to having a beneficial effect on the work, the cost of lighting, one of the major overhead items, is reduced to a minimum.

In the matter of heat radiation, paints also show valuable characteristics. It is a well known fact that black and dark colors absorb more heat and allow less radiation than lighter colored materials. It pays, therefore, to use light colors in the finishing room, particularly on radiators and other heating units. Tests indicate that appreciable savings in fuel can be realized if dark colors are eliminated in favor of white or cream.

The finishing industry today has no room for anyone but the progressive manufacturer. Those who are so shortsighted as to believe it unnecessary to keep the finishing room bright and clean, who refuse to use paint to their advantage, who ignore the bad effects of a dark dirty workshop on the products as well as the workman, will find themselves losing to competition that appreciates the value of a good paint job in the finishing room.—W. S.

Ventilating Fan Bulletin

A 4-page bulletin (No. 206) describes and illustrates the "Allvent" electric fans manufactured and sold by the Autovent Fan & Blower Co., 1819 N. Koster Ave., Chicago, Ill. These fans are attractively designed and carefully engineered to provide efficient movement of air under many and varied conditions.

PASTEL SHADES

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EDITORIAL

Checking Off-Color Finishes Versus Workmen's Eyesight

"The Vitamin 'A' Therapy technique of improving efficiency and relieving eye fatigue among certain types of industrial workers has proved highly successful," according to Ralph F. Bisbee, Chief Inspector of the Westinghouse Electric & Mfg. Co's. plant in Mansfield, Ohio.

"First industrial application of this technique, carried on for the last 25 months at the Mansfield plant, has been 'an almost unbelievable performance'," Bisbee told the Porcelain Institute Enameling Forum at Ohio State University. "Major results," he said, "were these:

"1) Assembly line rejects due to off-color parts have been reduced from an average of 1.7% to an average of 0.3%.

"2) It has increased the quality of Westinghouse products and entirely eliminated complaints of non-uniform color.

"3) It has resulted in a considerable saving, amounting to more than $5000 a year on ranges alone, because fewer changes in off-color parts after assembly are necessary."

The technique consists of supplying the workers Vitamin A, which regenerates the "visual purple," a substance in the retina of the eye which is vital to the process of seeing. When light falls on the retina, which corresponds to the film or plate in a camera, the visual purple is gradually changed into another substance. It is this change, scientists say, which determines the sensitivity of the eye.

"Investigation into Vitamin A Therapy was started early in 1937 after the most modern improvements in shadowless lighting reduced assembly-line rejects from an average of 3% to 1.7%," Mr. Bisbee said.

"It was found that color matchers, whose job it is to see that all the enamel parts on Westinghouse products are within predetermined color limits, were all young men chosen with great care and that all had been checked periodically for visual defects and color blindness." ("Contrary to the common belief that 'white is white', there actu-

ally are as many degrees of whiteness as there are shades of blue," Bisbee pointed out.)

"The company's medical investigators became convinced that some of the workers were suffering from eye fatigue not revealed by regular eye tests," Bisbee said. "Their study led to clinics, medical colleges, and the American Medical Association."

Tests were conducted at the Westinghouse plant in Mansfield with a Bio-Photometer, which determines if a person is deficient in Vitamin A, and it was decided to administer Vitamin A to those found deficient. They were given carotene-in-oil, a concentrated source of the vitamin. The reported results followed.

Furniture Show Highlights

Reporting on the Spring Furniture Market, held at the American Furniture Mart, April 29 to May 4, Rosalie Flank says:

Carefully shopping many lines to find "style at a price," the merchants placed their orders in large quantities for June 15 to July 1 delivery, where it was believed the style and price brackets were in keeping with fairly certain, predetermined ideas of the trend. New "high style" merchandise was freely sampled to "give spice" to present inventories, and manufacturers who put thought and design effort into new groupings were well rewarded for their work.

Prices were firm in all divisions of the industry, the market following an orderly procedure in all price brackets.

Worked out to practically a "standard recipe" were the 18th Century groups following Hepplewhite or Sheraton design which included poster or paneled beds with openwork treatment on head or footboard, swell-front chests on chest and dresser or vanity with shield-shaped mirror. Varying in construction and trim, according to price, some using marquetry, others employing striping or cross-banding, popular promotional-price brackets for 3-piece units centered in the retail selling brackets of $79.50 to $129.50. Identical light suites in "toast" and "autumn" shades, stained down from a natural tone, sealed and waxed, answered the demand for "modernized 18th Century" and followed a similar price bracket . . . .

Interest in Regency revived Duncan Phyfe pieces, hoisting them to new popularity in the fashion picture. Many manufacturers, wishing to straddle the stream, solved the "Regency" problem by showing suites of Duncan Phyfe origin with optional metal grille inserts in head or footboard of beds, on mirrors, or on doors of chinas and buffets. Others went frankly "Regency" in modified form, adopting familiar motifs of the Regency period.

Modern showed not only the greatest progress but greatest ingenuity on the part of the manufacturers, and new groupings were well received. As 18th Century slides into the lower brackets and "waterfall" modern gradually fades from the picture, a new modern with interesting new treatments takes its place in the upper brackets. New pieces are designed to be used in a variety of combinations, small chests al-

ternating as night stands or vanity compartments. "Right" and "left" pieces which may be used separately or in series presented a new aspect to the modern picture now called "contemporary," "livable" or "New American," in an attempt to distinguish it from the popular conception of "moderne." Complete absence of hardware was particularly noticeable in some instances, while plastic or wood handles, designed as part of the case, were noteworthy in others. Various types of trim, including cross-banding, inlay or striping, added interest to the modern case pieces shown in dark wood tones or medium light tones.

An interesting trend was the increased showing of modernized Jacobean or "limed oak" which appeared in many of the case goods lines. Both dining room and bedroom groupings employed modernized Jacobean motifs carved out or applied to case pieces, and the new groupings offered a fresh and interesting new approach which awakened new interest in the heavier type of wood pieces such as maple, birch and cherry.

The Executive and the Technologist

Modern industry looks for its future development not to the expansion of land frontiers or new sources of raw materials, but to the creation through research of new products from existing materials. It is well to consider not only in whose hands such potentialities for change lie and how competent those hands are to control them, but to what extent there is unity of outlook between them and the business executives. Complete understanding between top executives and research leaders is most necessary.

While there is a trend toward bringing technical men into leading executive positions, there will be an interim during which the more traditional type of executive and the research leader will have to make special effort to get together mentally.

It would be too conservative to think that executives think only of money and that technical men are theoretical and impractical. The successful executive devotes much attention to understanding the basic processes of his industry and the research leader usually appreciates the problems and difficulties of executive control.

There are, however, plenty of possibilities for misunderstanding arising from the different backgrounds of the executive and research type and the way they work. Possibilities exist of the prestige and authority of a top executive clouding true issues. . .

Three main pillars of modern technological industry are capital, science (or technology) and labor. If these three can be properly meshed by executive skill into a smoothly working whole, prosperity and safety alike are on a sound foundation. Science in industry is no dilettant occupation for dreamers but a revolutionary force which industrial executives should exert themselves to understand, go more than half way to meet and work to blend into the complex machine of industry. Any industry which neglects to take account of what is going on in the research laboratories is on the road to decay.—SOCIETY OF CHEMICAL INDUSTRY.

Future Foreman Finishers

★ Not, out of mind, but actually out of existence. I think this a rather apt statement in regard to future foreman finishers. The supply of future foreman finishers has long been a subject that has given me much concern. I have talked to workmen who had qualifications that "might" be construed as being good timber from which to build, but the results have been far from encouraging.

The first drawback, considered from the angle that nearly 100% of the workmen look at a foremanship, is that they balk at the responsibility. Next, in some establishments, there is not enough difference between the remuneration of a workman and a foreman to make it worthwhile for the men to prepare themselves for the advanced position.

In considering the possibility of advancing a workman to become the head of a department, take notice of his lack of qualifications. Observe how dependent on his foreman the average workman is. Most of them seem to think that the boss is there to act in the capacity as a supplier of knowledge solely for the workman's benefit. To transpose such workmen from one side of the fence to the other, it becomes necessary for a transposition of their mental attitude to take place—a rather difficult change to bring about. One workman declared that if he were foreman, the first thing he would do would be to give everybody a raise.

Now, looking at the supply of future foreman finishers, perhaps it would be well to think seriously about the necessary qualifications for such a position; and in doing just that there are two qualities that stand out: First, executive

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ability; second, craftsmanship. Fortunate is the company that can find both of these qualifications in one man. There are plenty of good craftsmen; also, plenty of men with executive ability. The lamentable fact is that there are few craftsmen executives.

If we acknowledge the foregoing statement to be true, and I think it is, then we have a basis upon which to work. We can make future foreman finishers out of men possessing executive ability. If they possess that qualification they can acquire the necessary knowledge to handle the craftsmanship part of the job.

It is my opinion that a young man with executive ability, if taken into the confidence of the foreman finisher and taught what constitutes good finishing, will learn how to manage the department in a much more satisfactory manner than the workman who is promoted to the job. I say this because the young man will be starting with an ability that is difficult to acquire and, having that ability, he will have sufficient knowledge to soon learn the craftsmanship part of the business.

What I write here is not just conjecture. To my personal knowledge, the process for making a foreman finisher, as I advocate, has been tried and is a success.—W. K. PERDUE.

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Solids in the Can, or Solids in the Final Finish

★ In almost any discussion between a purchasing agent and salesman or finishing foreman and service man, upon the merits of lacquer or varnish, there is probably far too much emphasis placed upon the percentage of solids in the material.

The fallacy of placing too much emphasis on solids, to the neglect of the other features in a finishing material, was strikingly impressed upon me when I had an opportunity to listen to one of our "Old Timer" service men demonstrating and describing a lacquer sealer and lacquer top coat.

The customer wanted to know right off:

"How much solids and what is the price?"

Our service man replied:

"Let's not talk about solids in the can. What you're interested in is solids on the work and how it looks when it's finished. I'll agree we have to give you value

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for your money, but solids in the can doesn't mean anything to you if it doesn't show up on the work—and besides, it will cost you money to remove some of the coating before you really have a suitable finish."

Our "Old Timer" had something there. Too many buyers think that if they get a low price per gallon and high-solids content, they should have no further concern—and that it's up to the finisher to produce excellent results at low cost for labor. These short-sighted men don't realize that a well formulated lacquer of moderate solids content will generally leave more solids on the work and, by its greater clarity, will look like still more film on the surface.

People who buy on the solids-content basis, as the chief specification, usually find their finishers having trouble with flow and spraying, so that labor must be expended to remove a good proportion of the solids in order to get a smooth film. Also, there is often much to be desired in the clarity of the film, so that even if a heavier film is actually attained, it does not look as full as a thinner but more clear film.

To get back to our "Old Timer," he demonstrated the lacquer sealer, and the results shown by the finish and mileage obtained convinced the customer that his interest was in what the materials would do under actual working conditions, and that the percentage of solids was really only a secondary consideration. More buyers should drop this emphasis on solids and put more emphasis on the finish.—H. D. H.

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Getting the Most from Conveyorized Spraying

★ The installation of a trolley conveyor for use in continuous spraying does not necessarily assure all the economies expected. Unless the product is more or less uniform in size and surface area, the sprayers may not be kept equally or economically occupied, particularly if no provisions have been made to group the items so as to present a fairly uniform amount of work for the sprayers to perform as the conveyor moves past them.

Sometimes spray booths are installed that are too short for the number of sprayers required to handle production. Very seldom is one installed that is too long. Quite often, the too-short booth condition is caused by unbalanced or scanty conveyor loading. Frequently the product is suspended from the conveyor in such a manner that the sprayers have to hold it with one hand while spraying.

Often a multiplicity of small parts are individually suspended from the conveyor making the surface area possible to cover per minute very small. With a well planned conveyor layout, each sprayer should cover approximately from 10 to 15-sq.ft. of surface area per minute, depending on the nature of the product and the type of finish desired.

Before installing a conveyor for production spraying, a thorough study of the amount of sprayed area desired per hour should be made. The amount of sprayed area possible for the sprayers to cover should be known, suitable spacing of the work on the conveyor should be arrived at, and a conveyor speed that is practical should be selected.

Hangers and wire-frame fixtures with pliable hooks for adaptation to assorted products can be, and have been devised to facilitate the grouping of parts, thus obtaining fairly uniform square-foot loading, and making possible slower conveyor speeds and greater surface coverage per sprayer.

Generally speaking, slower conveyor speeds make for shorter spray booths and less walking by the sprayers, provided, of course, that the desired production has been assured by compact loading. —H. P. MADSON.

For Foremen Only

Foreman Ed Williams was in hot water. He was swamped with work. Night after night he had to stay to take care of jobs that he couldn't find time to do during the day.

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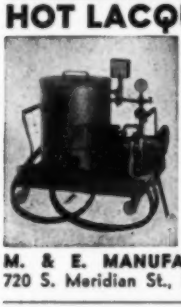

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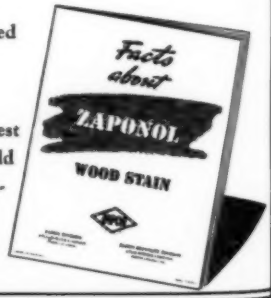

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